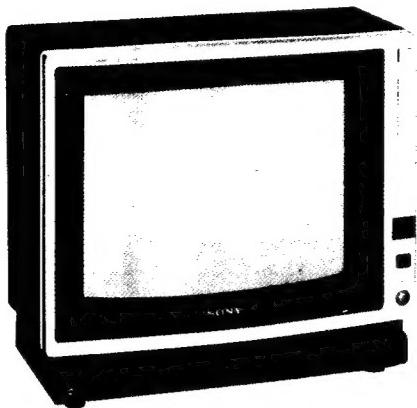


KV-1357R/1358R

RM-714

SERVICE MANUAL



US Model

KV-1357R

Chassis No. SCC-486N-A

KV-1358R

Chassis No. SCC-486O-A

April, 1984

P2A CHASSIS

SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHF : 2 - 13 UHF : 14 - 69 Cable TV : 14 - 36, 98, 99 (a total of up to 14 preselected channels)
Picture tube	Trinitron tube 13-inch picture measured diagonally
Hit connector	Auxiliary RF input for VHF channels 2 - 6 75-ohm (F-type)
Power requirements	120 V ac, 60 Hz
Power consumption	90 W (max.), 58 W (average) 2.2 W (in standby condition)
Accessories supplied	Remote Commander RM-714 with 2 size AA batteries Indoor telescopic antenna (VHF/UHF) with antenna connector Phono-F plug adaptor Earphone

Design and specifications subject to change without notice.



MICROFILM

TRINITRON® COLOR TV
SONY®

CTV

WARNING!!

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DURING ANY SERVICE TO AVOID POSSIBLE SHOCK
HAZARD BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CON-
NECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK
 ON THE SCHEMATIC DIAGRAMS, EXPLODED
VIEWS AND IN THE PARTS LIST ARE CRITICAL TO
SAFE OPERATION. REPLACE THESE COMPONENTS
WITH SONY PARTS WHOSE PART NUMBERS APPEAR
AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS
PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS
THAT ARE CRITICAL TO SAFE OPERATION ARE
IDENTIFIED IN THIS MANUAL. FOLLOW THESE PRO-
CEDURES WHENEVER CRITICAL COMPONENTS ARE
REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

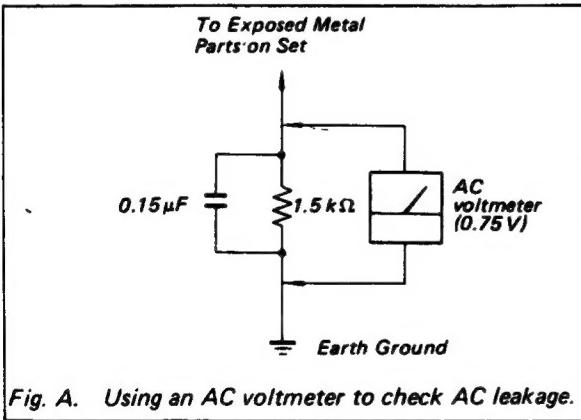


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

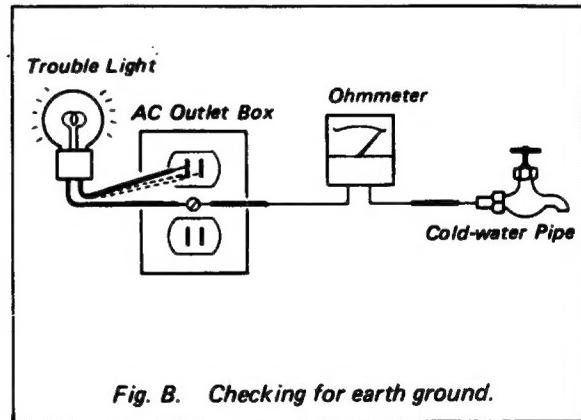
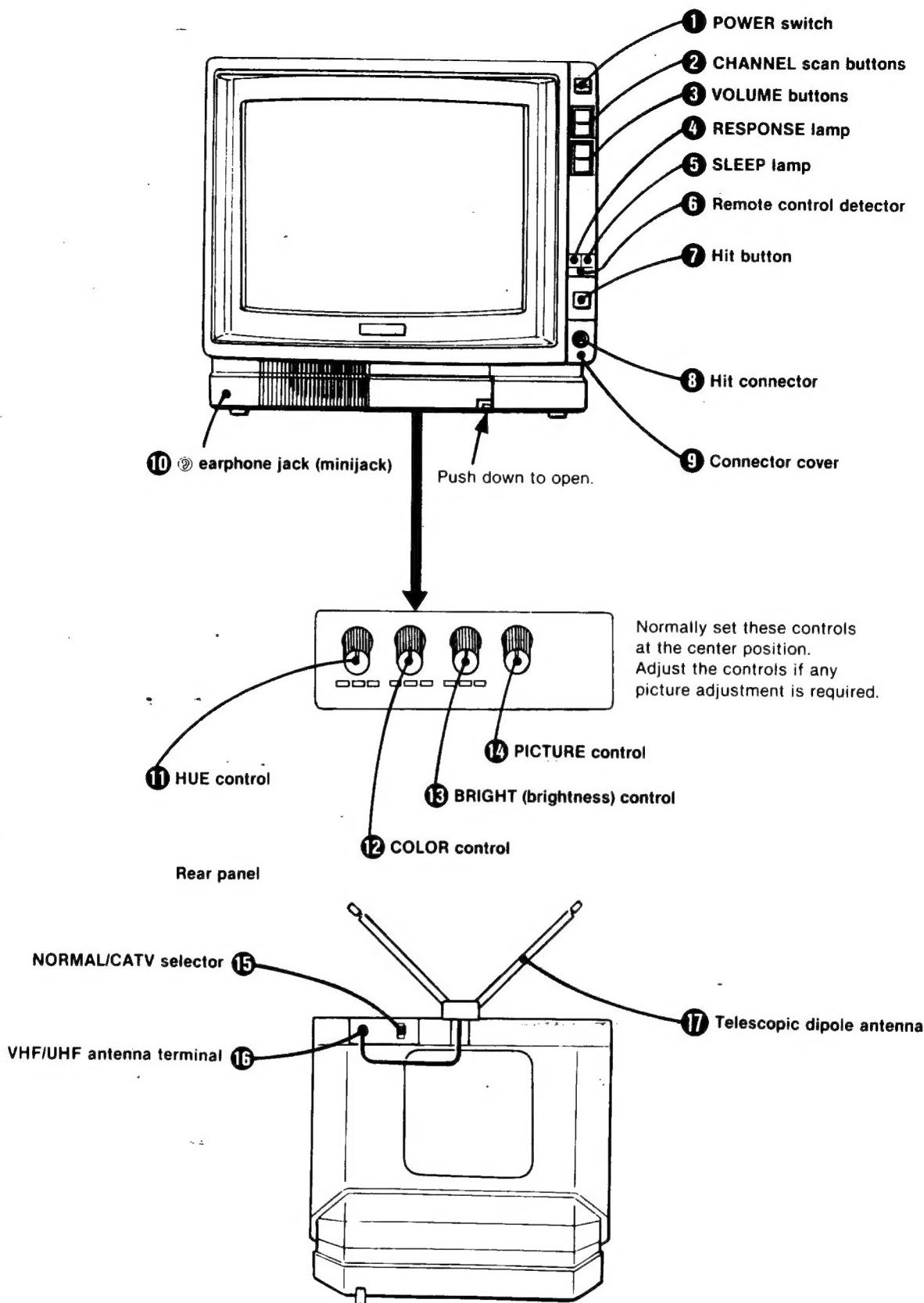
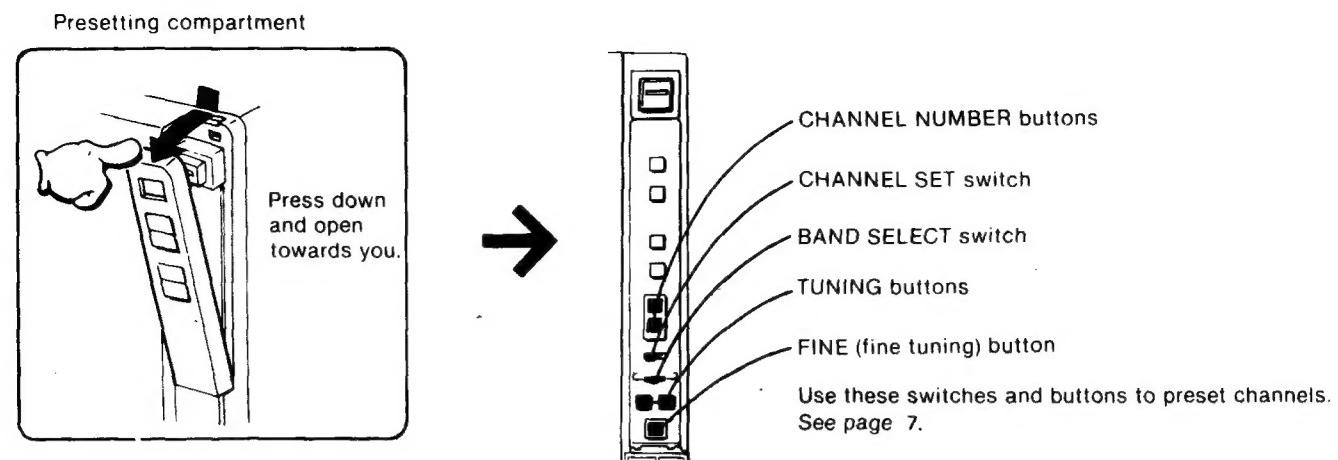


Fig. B. Checking for earth ground.

SECTION 1 GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS



**① POWER switch**

Depress to turn on the TV. Press again to turn it off.

Keep the switch depressed to operate the TV with the Remote Commander.

② CHANNEL scan buttons

Press + for higher-numbered channels, or - for lower-numbered channels. The selected channel number will appear on the screen.

③ VOLUME buttons

Press + to increase the volume and - to decrease it.

④ RESPONSE lamp

Blinks when the + or - VOLUME button is pressed. At the lowest or the highest volume, or while the sound is muted, this lamp lights steadily.

⑤ SLEEP lamp

Lights when the SLEEP button on the Remote Commander is pressed.

⑥ Remote control detector**⑦ Hit button**

To view the signal from the Hit connector, press this button. The indication "Hit" will appear on the screen. To adjust the Hit button to match the equipment to be connected, use the controls in the presetting compartment. For the presetting procedure, see Page 8.

⑧ Hit connector (Auxiliary RF input, VHF ch. 2 - 6, F-type)

Connect an RF output of a home video game, a microcomputer, or a portable video cassette recorder to this connector.

⑨ Connector cover

Remove this cover so that the connector fits firmly, if required.

⑩ ⑪ earphone jack (minijack)

For private listening, insert an earphone plug into the jack. This disconnects the loudspeaker. Adjust the TV volume to a normal listening level.

⑫ HUE control

Turn clockwise for greenish skin tones, and counterclockwise for purplish skin tones.

⑬ COLOR control

Turn clockwise for more color, and counterclockwise for less color.

⑭ BRIGHT (brightness) control

Turn clockwise for more brightness, and counterclockwise for less brightness.

⑮ PICTURE control

Turn clockwise to increase contrast to a vivid color, and counterclockwise to decrease contrast to a soft color.

⑯ NORMAL/CATV selector

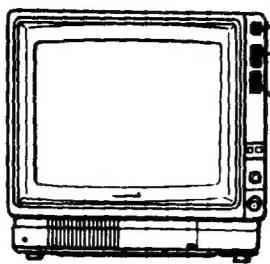
For VHF and UHF channel reception, set the selector to NORMAL. For cable TV channel reception, set it to CATV.

⑰ VHF/UHF antenna terminal

Connect a VHF/UHF antenna or a CATV cable here.

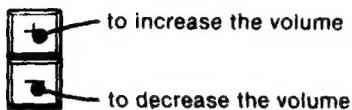
⑱ Telescopic dipole antenna

1-2. NORMAL TV OPERATION (PANEL OPERATION)

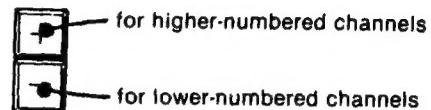


1 Depress POWER.
The picture will appear.

3 Adjust the volume by pressing + or - VOLUME.

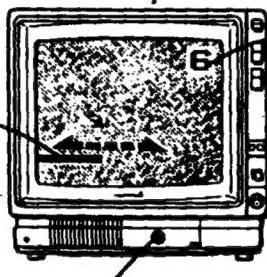


2 Select the desired channel by pressing + or - CHANNEL.



The bar indication
will appear on the screen.
As the volume increases, the bar
will be longer. This indication
will disappear in a few
seconds after the adjustment is
completed.

ATTENTION !!



The selected channel number
appears on the screen.
To extinguish the channel number, press CHANNEL
DISPLAY on the Remote Commander. Then, each
time you press CHANNEL + or - to change
the channel, the indication on the screen will disappear
after a few seconds.

4 Adjust the picture to your preference using the HUE,
COLOR, BRIGHT and PICTURE controls.

To turn the TV off, press POWER.

For presetting desired channels, see pages 7 - 9.

1-3. CHANNEL PRESETTING

Each of the 14 channel positions of your set can be set to receive any of the VHF channels 2 - 13, UHF channels 14 - 69, and the 25 cable TV channels listed below. The Hit connector can be adjusted to receive any of the VHF channels 2 - 6 according to the type of equipment (RF output) to be connected. It is factory-adjusted to channel 3.

To set desired television broadcast channels or to readjust the channel received by the Hit button, follow the instructions in "PRESETTING PROCEDURE" on the next page.

NOTE

If you own a video cassette recorder, we recommend that you not cancel channel 3 or 4 — whichever is inactive in your area — but use it to receive signals from the video cassette recorder.

BEFORE SETTING CHANNELS

Before setting your desired channels, check that the NORMAL/CATV selector on the back of your set is in the correct position according to what you have connected to your set.

If you have connected a ...	set to ...
VHF and/or UHF antenna(s)	NORMAL
CATV cable	CATV

Cable TV channel chart*

Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

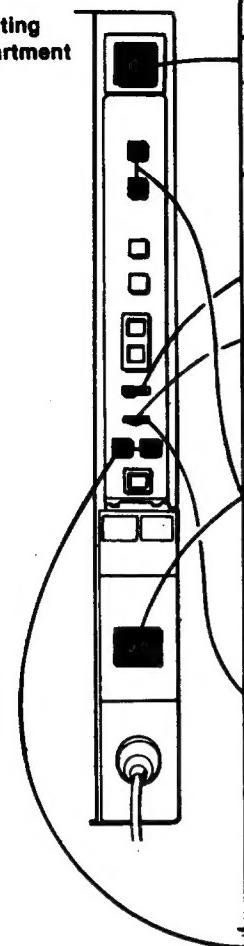
Mid-band channels	Super-band channels
A-2	98
A-1	99
A	14
B	15
C	16
D	17
E	18
F	19
G	20
H	21
I	22
J	23
K	24
L	25
M	26
N	27
O	28
P	29
Q	30
R	31
S	32
T	33
U	34
V	35
W	36

Not all cable TV channels listed will be active in your area. Check with your local cable TV company for more complete information on the available channels.

* The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

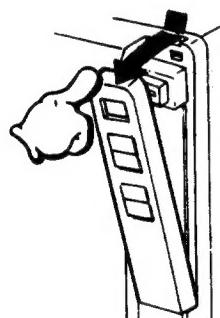
PRESETTING PROCEDURE

Presetting compartment



CHANNEL scan buttons	Hit button										
1 Depress POWER.	Turn on the equipment connected to the Hit connector. (If it is a VCR, play back a prerecorded tape.)										
2 Set CHANNEL SET to ON.	The selected program position number should blink with the picture of the presently set channel. If the picture turns black or into snow, set BAND SELECT to either of the remaining 2 positions so that the number blinks clearly.										
3 Select the channel position to be preset with CHANNEL scan buttons. 	Press Hit. The Hit indication should blink. 										
4 Set BAND SELECT to one of the three positions: V _L : for VHF 2 - 6 V _H : for VHF 7 - 13 and cable 23 - 36 U/V _M : for UHF 14 - 69 or cable 98, 99, 14 - 22	Band V _L will be selected regardless of the BAND SELECT setting.										
 <p>Selected BAND SELECT position will be underlined.</p>											
5 Keep + or - TUNING pressed until...	the clear picture of the desired station is obtained. the signals fed from the Hit connector are properly tuned in.										
<p style="text-align: center;">TUNING</p> <p>for lower-numbered channels for higher-numbered channels </p> <p>The length of the bar provides a visual indication of the approximate location you are tuned to within the selected band.</p> <p>Lower-numbered channels Higher-numbered channels </p> <table> <tr> <td>V_L</td> <td>VHF 2 ← → 6</td> </tr> <tr> <td>V_H</td> <td>VHF 7 ← → 13, cable TV 23 ← → 36</td> </tr> <tr> <td>U/V_M</td> <td>UHF 14 ← → 69</td> </tr> <tr> <td colspan="2" style="text-align: center;">or</td> </tr> <tr> <td colspan="2" style="text-align: center;">cable TV 98, 99, 14 ← → 22</td> </tr> </table>		V _L	VHF 2 ← → 6	V _H	VHF 7 ← → 13, cable TV 23 ← → 36	U/V _M	UHF 14 ← → 69	or		cable TV 98, 99, 14 ← → 22	
V _L	VHF 2 ← → 6										
V _H	VHF 7 ← → 13, cable TV 23 ← → 36										
U/V _M	UHF 14 ← → 69										
or											
cable TV 98, 99, 14 ← → 22											
<p>The RESPONSE lamp lights steadily when the highest- or the lowest-numbered channel within the present band is tuned in.</p>											
Repeat steps 3 through 5 for all the channel positions to be preset.	—										
6 Set CHANNEL SET to OFF.	—										

Remove the lid and expose the switches and buttons.

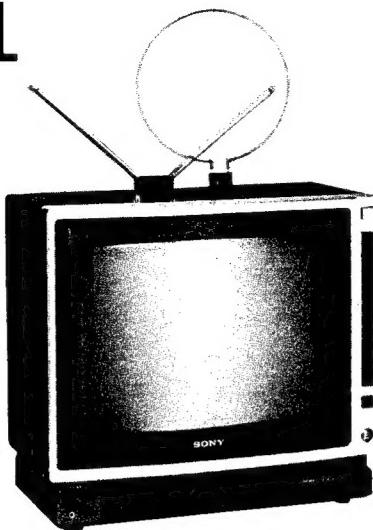


KV-1331/1332

3439

SERVICE MANUAL

US Model



Chassis No.

KV-1331 : SCC-486A-A

KV-1332 : SCC-486B-B

April, 1983

P2A CHASSIS

SPECIFICATIONS

KV-1331/1332

Television system	American TV standards
Channel coverage	VHF channels 2-13 UHF channels 14-83 (a total of up to 14 preselected channels)
Picture tube	Trinitron tube 13-inch picture measured diagonally 90-degree deflection
Antenna	VHF telescopic dipole antenna 75-ohm external antenna terminal for VHF UHF loop antenna 300-ohm external antenna terminals for UHF
Hit connector	Auxiliary RF input for one channel between VHF ch. 2 through ch. 6 75-ohm (F-type)
Speaker	9 x 5 cm
Power requirements	120 V ac, 60 Hz
Power consumption	80 W (max.), 55 W (average)
Dimensions	Approx. 392 x 355 x 412 mm (w/h/d) (15½ x 14 x 16¼ inches)
Weight	Approx. 11.3 kg (24 lb 15 oz)
Accessories supplied	VHF telescopic dipole antenna AN-18 Antenna connector UHF loop antenna AN-15 Phono-F plug adaptor EAC-88 Channel number segments (1 set) Earphone ME-20B

Design and specifications are subject to change without notice.

TRINITRON® COLOR TV
SONY®

CTV

3439



MICROFILM

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HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CON-
NECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!

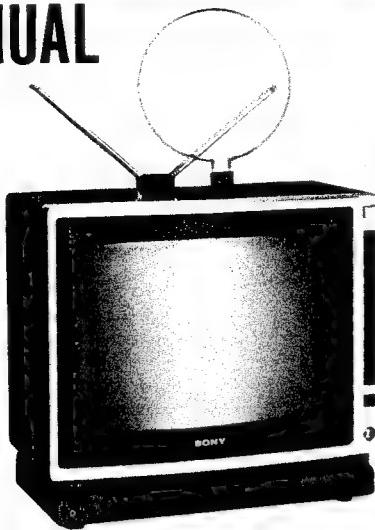
COMPONENTS IDENTIFIED BY SHADING AND ! MARK
ON THE SCHEMATIC DIAGRAMS ARE CRITICAL TO
SAFE OPERATION. REPLACE THESE COMPONENTS
WITH SONY PARTS WHOSE PART NUMBERS APPEAR
AS SHOWN IN THE SERVICE MANUAL.

CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO
SAFE OPERATION ARE IDENTIFIED IN THE SERVICE
MANUAL PUBLISHED BY SONY. FOLLOW THESE
PROCEDURES WHENEVER CRITICAL COMPONENTS
ARE REPLACED OR IMPROPER OPERATION IS
SUSPECTED.

KV-1331/1332

ADJUSTMENT MANUAL

US Model



June, 1983

P2A CHASSIS

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MICROFILM

TRINITRON® COLOR TV
SONY®

CTV

BASIC ADJUSTMENTS

Please refer to the Color Television Adjustment Manual (1) for adjustments other than those below.

 indicates corrected portions

1. BASIC ADJUSTMENTS

1-1. Focus

- ① Receive a broadcast.
- ② Set for optimum picture with PIC VR and BRT VR.
- ③ Adjust for perfect horizontal and vertical sync.
- ④ Adjust with the focus control for best focus over the entire picture. (The focus control knob is the C board focus VR.)

1-2. White Balance

(Preparations)

Receive the crosshach pattern.

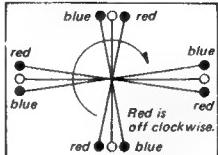
- 1) White balance near cut-off
 - ① Turn each drive control (RV704, 705) fully clockwise.
 - ② Set each cut-off control (RV701, 702, 703) at mechanical center.
 - ③ Turn brightness and picture knobs fully counterclockwise.
 - ④ Turn the screen RV706 control clockwise, and set at the point where either the red, green or blue raster begins to glow faintly.
 - ⑤ Turn the cut-off controls for the other two colors and adjust white balance.
- 2) White balance at white peak
 - ① Turn the brightness and picture knobs fully clockwise and check white balance.
 - ② If white balance adjustment is off, for example, if blue is strong, turn the blue drive control so that it darkens to get white balance. Do the same if another color is strong. If white balance near cut-off and at white peak cannot be adjusted, repeat the adjustment two or three times.

1-3. Convergence

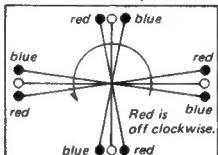
On a CRT using PFD (left/right pin distortion, free deflection yoke) only dynamic convergence adjustment is not required. For convergence adjustment, perform cross misconvergence and horizontal and vertical TILT adjustments as follows by tilting the deflection yoke neck. These are performed when there is misconvergence as shown in the figure.

(1) Cross misconvergence

Tilt deflection yoke up.

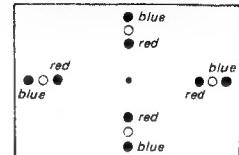


Tilt deflection yoke down.

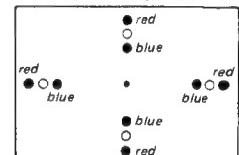


(2) H TILT and V TILT

Tilt deflection yoke to the left.



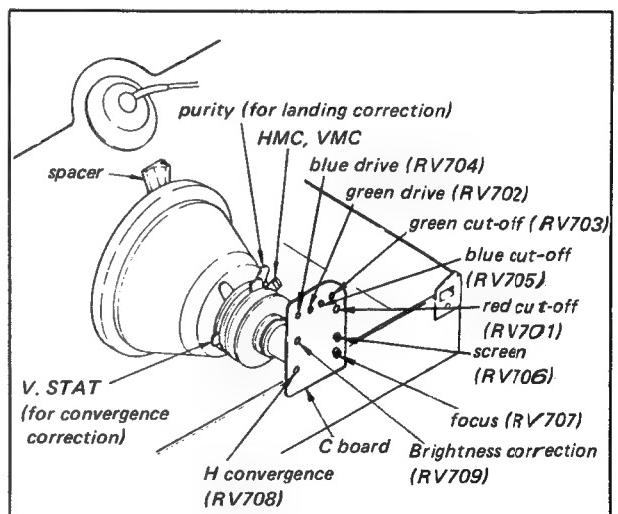
Tilt deflection yoke to the right.



1-4. Landing

Adjust purity for landing. For final checking, be sure to turn the set in the four directions and make sure there is no color unevenness.

1-5. Adjustment Elements for Basic Adjustment



2. SIGNAL ROUTE ADJUSTMENT

2-1. AFT Adjustment

- ① Receive a broadcast.
- ② Turn the auto fine tuning switch (AFT, SW) to off.
- ③ Turn the channel preset knob and get a 920 kHz beat.
- ④ Turn the channel preset knob and set at the moment when beat disappears.
- ⑤ Turn auto fine tuning switch on.
- ⑥ If the 920 kHz beat is generated, set T203 for the point where it disappears.

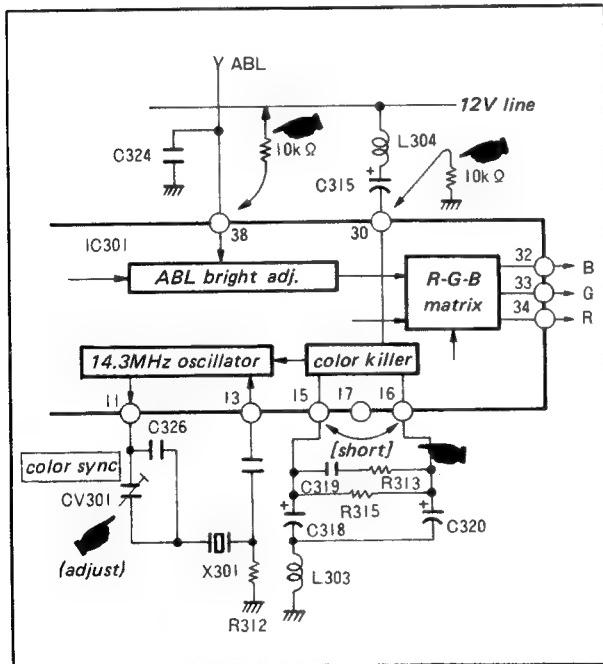
Check:

- ① Turn the auto fine tuning switch (AFT, SW) off.
- ② Turn the channel preset knob until color disappears and so that tuning is off, then confirm that AFT operates when the auto fine tuning switch is turned on.

3. CHROMA ADJUSTMENT

3-1. Color Sync (14.3 MHz Oscillator of Adjustment)

- ① Receive a color bar from a pattern generator.
- ② Set each knob as follows: Set color hue, color, brightness and picture knobs to mechanical center or center click.
- ③ Ground IC301 pin ⑩ via 10 kΩ.
- ④ Connect IC301 pin ⑧ to 12V line via 10 kΩ.
- ⑤ Short IC301 pins ⑯ and ⑯.
- ⑥ Turn CV301 while observing the picture, and adjust so that the picture color stripes stops. (color sync)

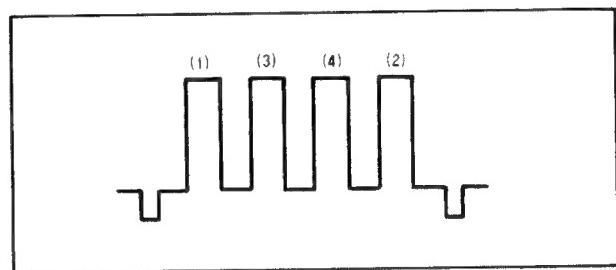


3-2. Color Level (ACC), Color Hue Correction Adjustment

- ① Receive a broadcast.
- ② Set the color and color hue knobs to mechanical center.
- ③ Adjust for best picture with picture and brightness knobs.
- ④ Adjust RV303 for optimum color.
- ⑤ Receive each channel and check that there are no extremes of color and color hue.

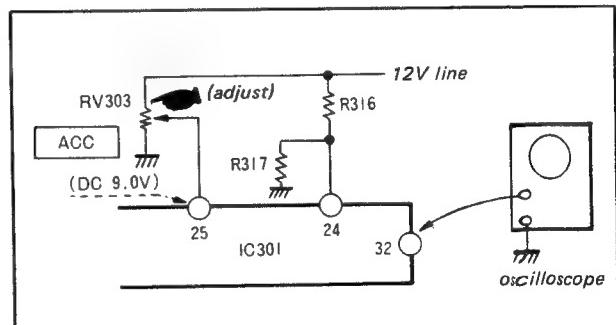
Adjustment using Oscilloscope

- ① Receive a color bar signal.
- ② Set the color hue, color, brightness and picture knobs to mechanical center.
- ③ Observe IC301 pin ⑧ (blue output) waveform on the oscilloscope, and adjust ACC VR (RV303) so that the waveform is as shown in the figure.



Note: First match up levels (1) and (2), then (3) and (4).

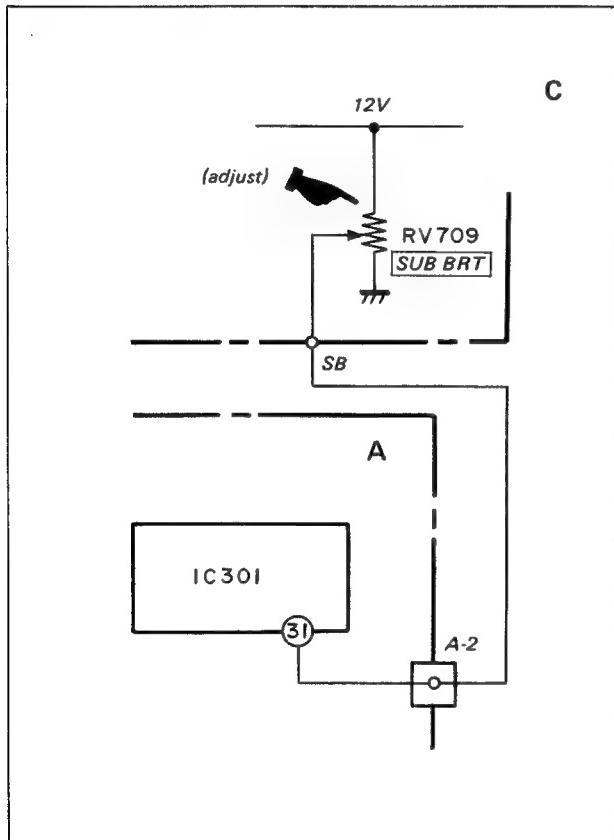
- ④ Confirm that ACC VR mid-point (IC301 pin ⑧) voltage is less than 9.0V DC. However, this is the voltage when the 12V line is 12.0V.



4. LUMINANCE SIGNAL ADJUSTMENT

4-1. Brightness Correction (on C board)

- ① Receive a broadcast.
- ② Turn the picture knob fully counterclockwise, and set the brightness knob for optimum picture.
- ③ Adjust RV709 for optimum brightness.
- ④ Set the picture knob for best picture.
- ⑤ Receive each channel and check that there are no extremes of brightness.

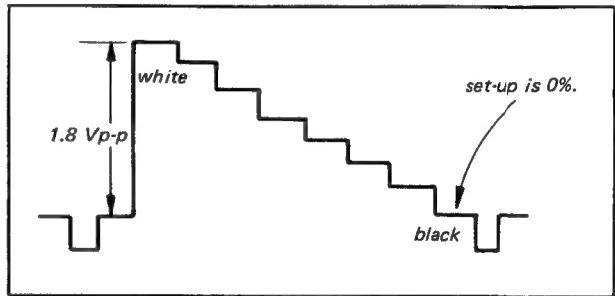


4-2. Subcontrast Adjustment

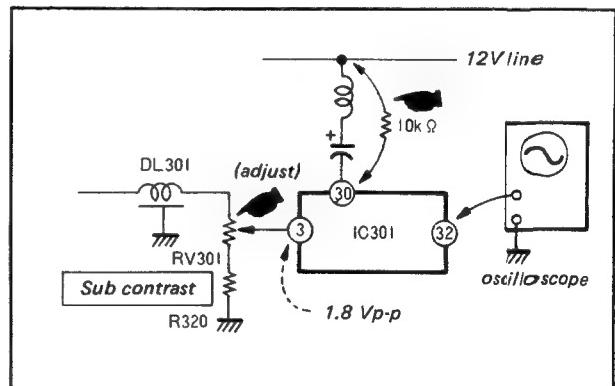
- ① Receive a broadcast.
- ② Set picture and brightness knobs for best picture.
- ③ Adjust RV301 for best contrast.
- ④ Receive each channel and check that there are no extremes of contrast.

Subcontrast Adjustment by Oscilloscope

- ① Receive a color bar signal.
- ② Set the knobs as follows:
 - Sharpness, HUE, COLOR: mechanical center or center click.
 - Picture knob: fully clockwise (100% MAX)
- ③ Connect IC301 pin 30 to the 12V line via 10 kΩ.
- ④ Observe IC301 pin 32 (blue output) waveform on the oscilloscope, and confirm that it is the luminance signal (Y signal) only.
- ⑤ Adjust RV301 so that the pedestal — white signal level is 1.8 Vp-p as shown in the figure.



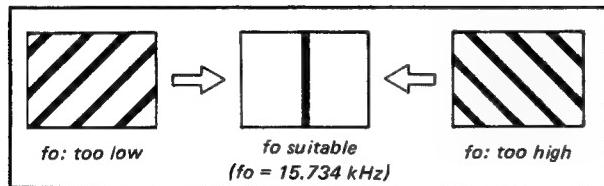
Note: If it is not 1.8 Vp-p, check that it is above 1.7 Vp-p.



5. DEFLECTION ADJUSTMENT

5-1. H FREQ

- ① Receive a broadcast.
- ② Set picture and brightness knobs at mechanical center, and set horizontal sync to the upper limit (fully clockwise). Set vertical size at mechanical center.
- Note:** V CENT, H CENT and H WIDTH are set at mechanical center.
- ③ Connect A board IC501 pin ⑩ to ground with a jumper wire.
- ④ Adjust RV501 (H FREQ VR) so that the picture flow is as shown in the center of the figure below.



- ⑤ Remove the jumper wire connected in step (3).
- ⑥ Check that the picture is not disturbed even when the channel is changed.

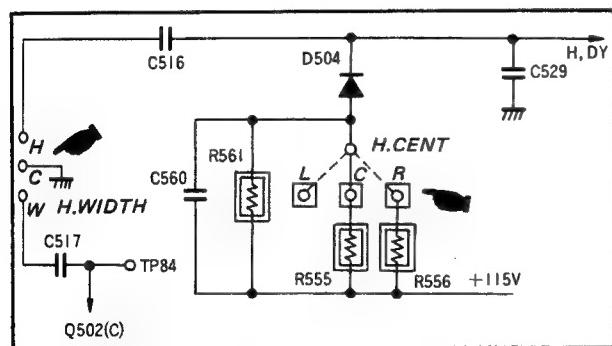
5-2. H CENT

- ① Input pattern generator.
- ② Adjust with the H CENT switching tap.

5-3. H WIDTH

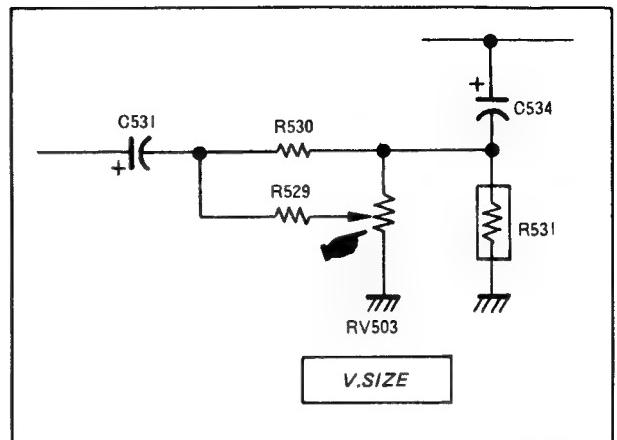
- ① Input pattern generator.
- ② If H WIDTH is 14.5 — 15.0 grids, it is OK. If it is less than 14.5 grids, switch tap to W. If it is more than 15.0 grids, switch tap to N.

H SIZE specification: 14.75 ± 0.25 grids



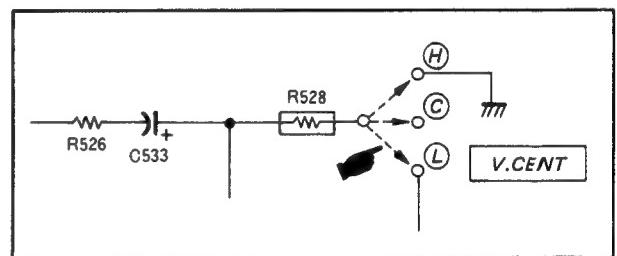
5-4. V SIZE

- ① Input pattern generator.
- ② Adjust with RV503 for 11.4 ± 0.2 grids.



5-5. V CENT

- ① Input pattern generator.
- ② Switch S501 so that the picture is centered.

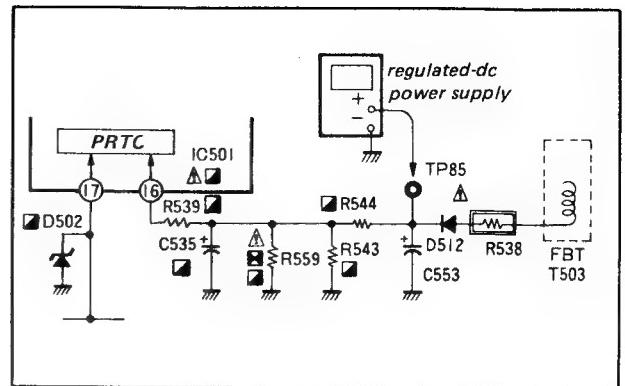
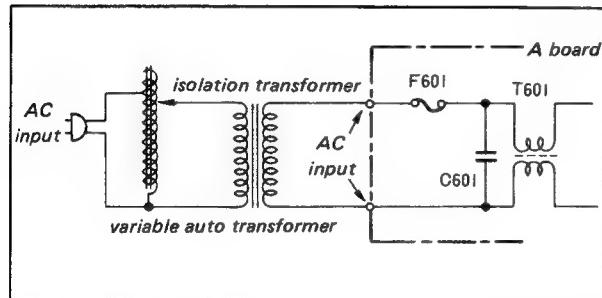


6. POWER SUPPLY ADJUSTMENT (HOLD DOWN CIRCUIT)

6-1. +B Line Check

Be sure to perform this adjustment when replacing IC601 (power supply module).

- ① Connect as shown in the figure, and apply AC $120 \pm 2V$ (voltage at both sides of C602 AC $160 \pm 2V$), distortion ratio under 3%, 60 Hz.



- ② Check that 135V line (TP91) voltage is DC $135V \pm 1.5V$.
- ③ If not, replace IC601 and check again.

6-2. +B MAX Check

- ① Input a signal and set picture and brightness to mechanical center.
- ② Check that +B line voltage (TP91) is less than $137.0V$ when AC $130V \frac{+1}{-0}V$ (voltage at both sides of C602 $174 \frac{+1}{-0}V$) 60 Hz is applied.

6-3. Protector Voltage Check

- ① Check that there is $19.1 \pm 1.2V$ between TP85 and ground when AC $120V$ is input.

6-4. Operation Check

- ① Apply DC $22.95 \frac{+0}{-0.05}V$ between TP85 and ground, and confirm that the hold down circuit operates (raster disappears).
- ② Receive the dot signal.
- ③ Short-circuit between pins ① and ⑥ of IC601.

6-5. Error Operation Check

- ① Confirm that applying $140 \pm 1V$ DC to + B voltage (at TP91), the hold-down circuit does not operate when changing the CH or turning power ON/OFF.

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Sony Corporation

— 8 —

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KV-1331/1332

SONY® SERVICE MANUAL

US Model

Chassis No.
KV-1331: SCC-486A-A
KV-1332: SCC-486B-A

CORRECTION-1

File this correction-1 with the service manual

: indicates corrected portions

Page 16: SECTION 3 SAFETY RELATED ADJUSTMENT

Correct	Incorrect
7) <i>Error operation check.</i> <i>Confirm that, applying $140 \pm 1V$ DC to +B voltage (at TP91), the hold-down circuit does not operate when changing the CH or turning power ON/OFF.</i> 	7) <i>Error operation check.</i> <i>Confirm that the hold-down circuit does not operate by adding $140 \pm 1V$ DC to +B voltage (at TP91) to change over the CH.</i>
R559 ADJUSTMENT (HOLD DOWN) <i>When replacing the following components (marked with on the schematic diagram), perform the adjustment as follows:</i> <i>(IC501 D502 R538 R544 R543 R539 R542 R541 R559) (C553 C535)</i> 	R559 ADJUSTMENT (HOLD DOWN) <i>When replacing the following components (marked with on the schematic diagram), perform the adjustment as follows:</i> <i>(IC501 D502 D512 R538 R544 R543 R539 R542 R541 R559) (C553 C535)</i>

Page 1

Correct	Incorrect
<i>Chassis No.</i> KV-1331: SCC-486A-A KV-1332: SCC-486B-A 	<i>Chassis No.</i> KV-1331: SCC-486A-A KV-1332: SCC-486B-B



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Consumer Products Group
Technical Support Dept.

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CTV

SONY
CONSUMERS ELECTRONIC COMPANY**color tv**
Service Bulletin No.193CONSUMER SERVICE COMPANY
Technical Department

Model: KV-1331/1332

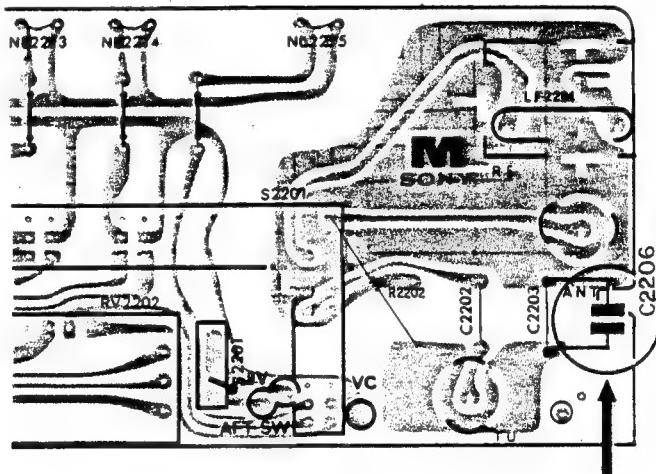
Subject: Missing Part Number from
Service Manual

Date: September 29, 1983

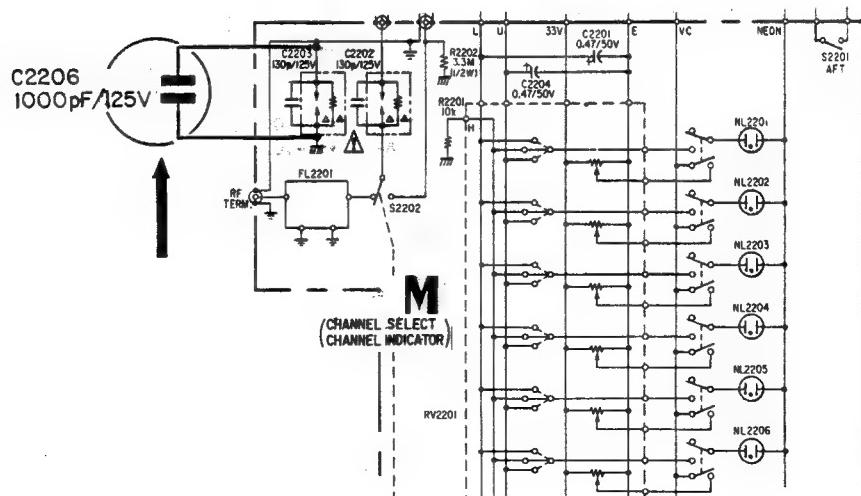
Note the following in your Service Manual:

Page 31	Description	Part Number
M Board	C2206, 1000pF/125VDC	1-161-741-12

Page 21



Page 23



SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

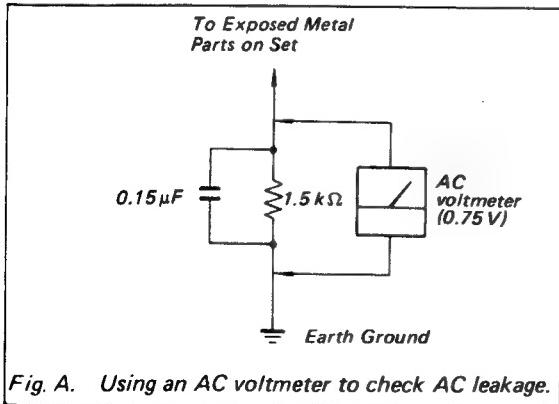


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

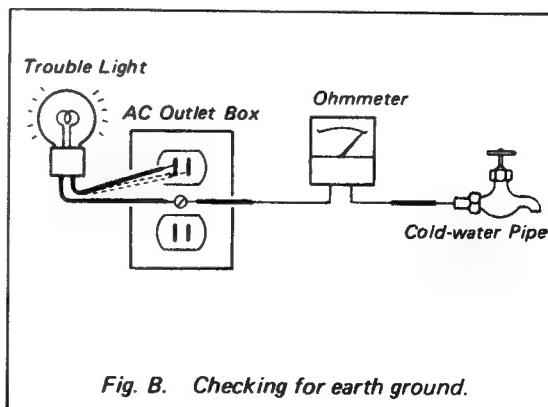
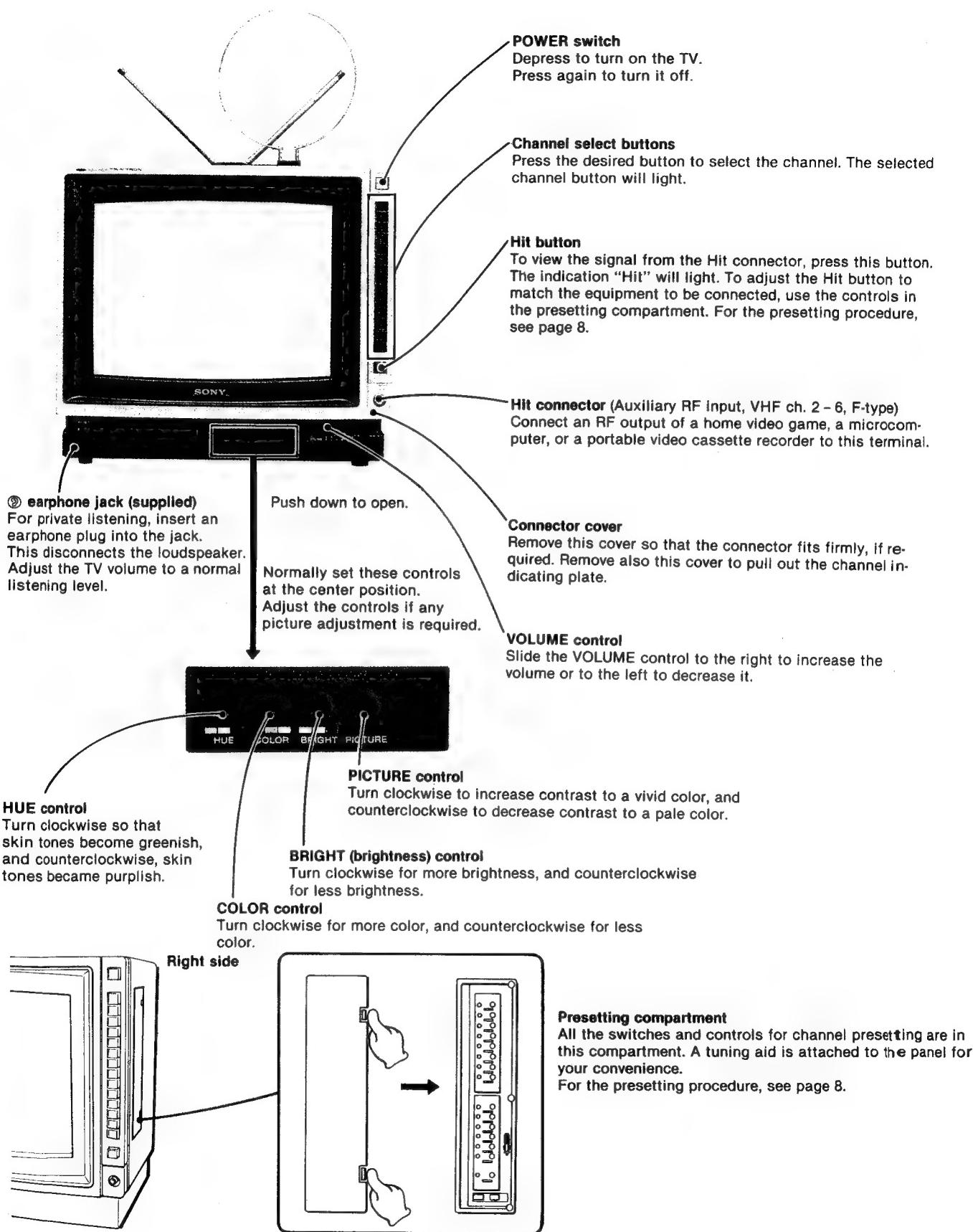


Fig. B. Checking for earth ground.

1. GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS



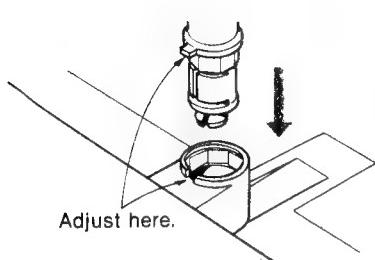
1-2. INDOOR ANTENNA CONNECTION

Complete the antenna connection, and then plug the set to the wall outlet.

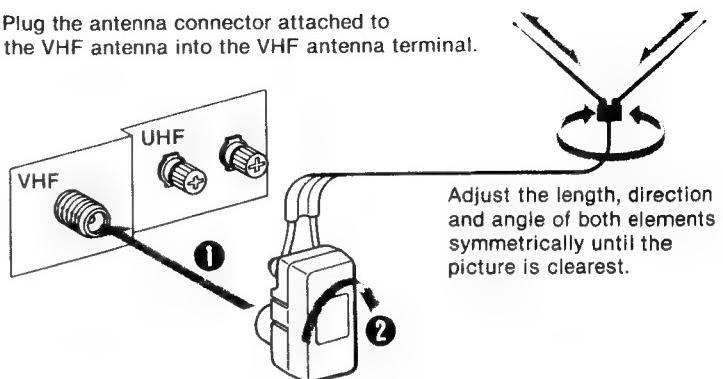
For VHF reception

Use the supplied VHF telescopic dipole antenna.

- 1 Insert the projection into the antenna receptacle on the set.

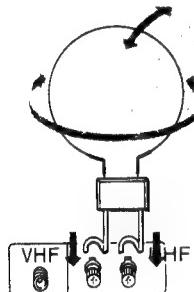


- 2 Plug the antenna connector attached to the VHF antenna into the VHF antenna terminal.



For UHF reception

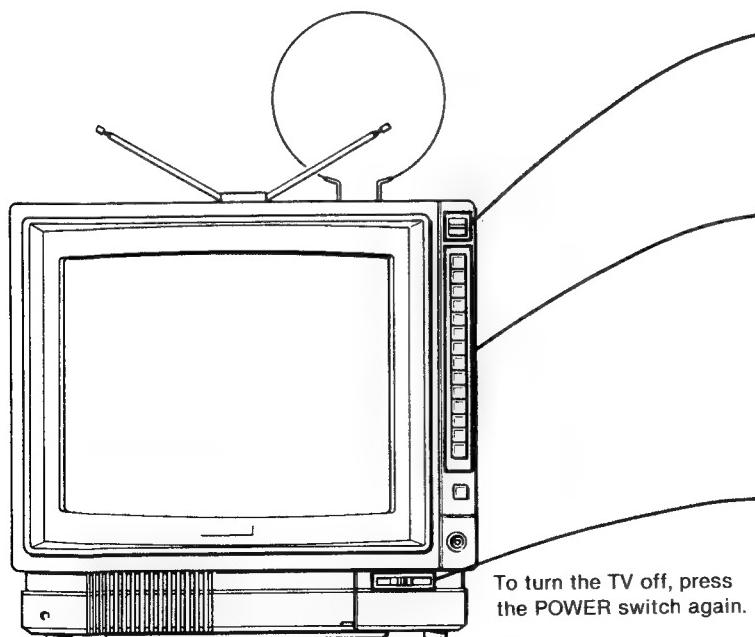
Use the supplied UHF loop antenna. Connect the lugs to the UHF antenna terminals and fasten with a screwdriver.



NOTE

If satisfactory results cannot be obtained with the supplied indoor antennas, install external antennas referring to page 11.

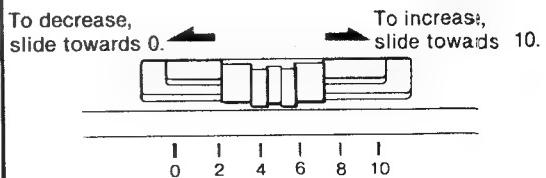
1-3. OPERATION



- 1 Depress the POWER switch.
The picture will appear.

- 2 Press the desired channel select button.

- 3 Adjust the volume by sliding the VOLUME control.



1-4. FRONT PANEL HIT CONNECTOR USAGE

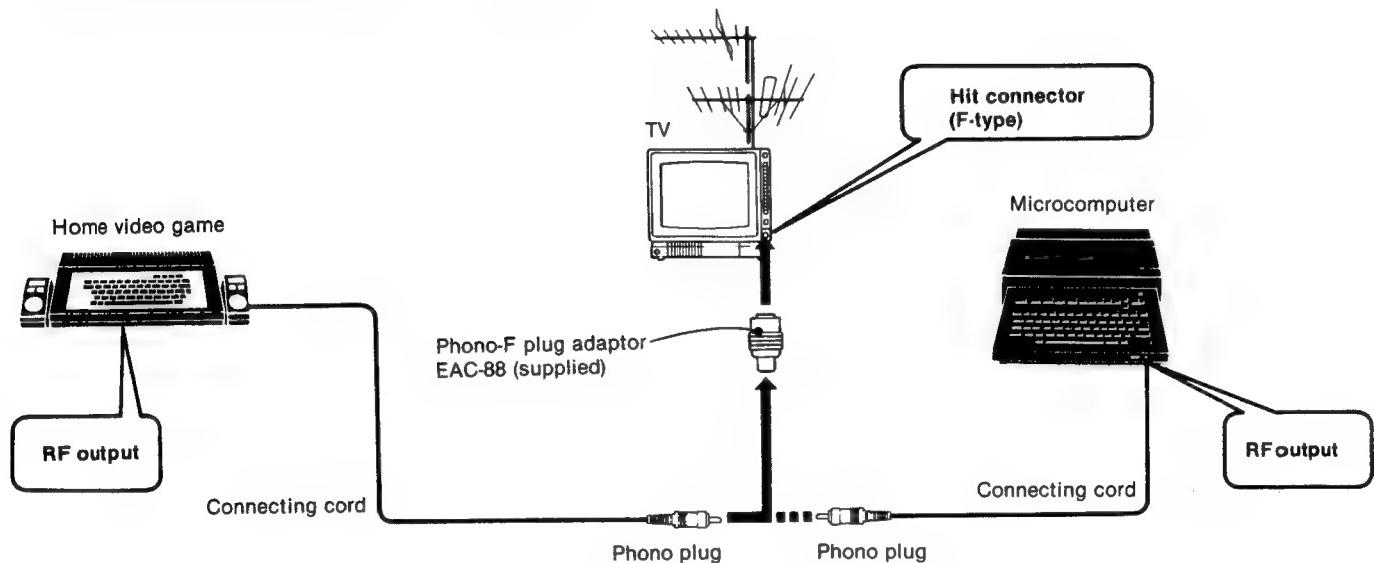
What is the Hit connector?

"Hit" is an abbreviation of Home Interface Terminal. Hit connector is an RF input for VHF ch. 2-6, (F-type) which may be used for the easy connection to a home video game, a portable VCR, or a microcomputer. To view the picture of the connected equipment, simply press the adjusted Hit button. You can enjoy the TV set as a display terminal for the connected equipment.

Caution

Unplug the TV and other equipment from the wall outlet before making the connections.

CONNECTION OF A HOME VIDEO GAME OR MICROCOMPUTER



NOTES

- The Hit connector is available for equipment that can deliver RF signal between VHF channels 2 through 6.
- If the microcomputer has been placed on or too close to the TV set, noise will appear on the screen. Keep the microcomputer an appropriate distance away so that the picture appears clear.
- The connection of a microcomputer sometimes causes distorted and noisy pictures. In this case, readjust the controls located in the front panel. When you go back to watching a TV program, readjust the controls again.
- When you go back to watching a TV program, simply select the channel you want to watch. If the picture is distorted, turn off the equipment connected.
- The picture quality obtained by connection to the Hit connector on the front of the TV and to the antenna terminal on the back is the same.
- While watching the TV, when the RF output of equipment connected to the Hit connector is too close to TV broadcasting frequencies, interference will occur. In this case, readjust the equipment's output frequency.
- If the F-type connector does not fit the Hit connector well, remove the connector cover. See page 9.

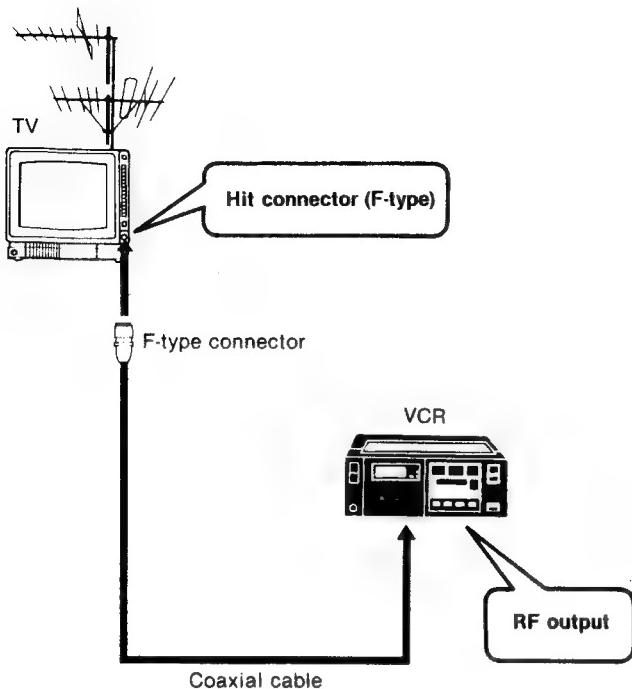
In case that the connecting cord has exposed wires rather than a plug, use an F-type connector. For details on the connection, refer to the instructions of the home video game or the microcomputer.

CONNECTION OF A FULL-SIZE VCR

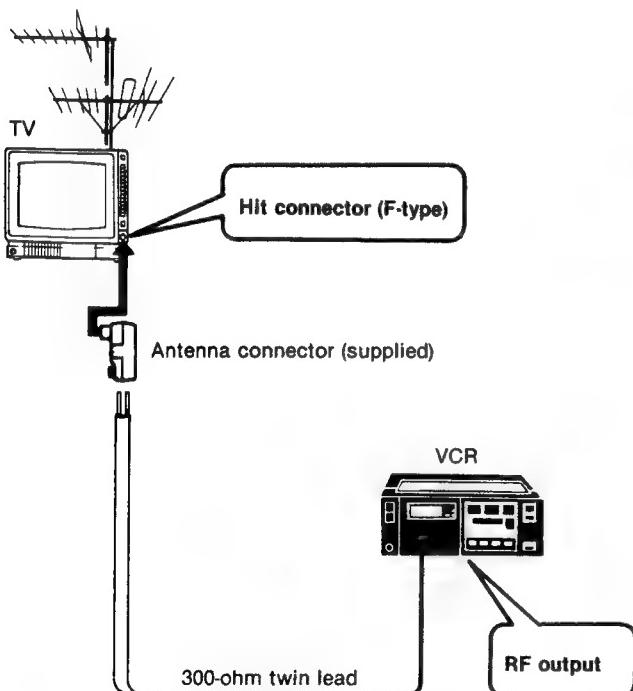
Connect a VCR to the antenna terminal on the TV's back, and connect the outdoor antenna only to the VCR. For details on the connections, see the instructions of the VCR.

CONNECTION OF A PORTABLE VCR

Coaxial cable



300-ohm twin lead

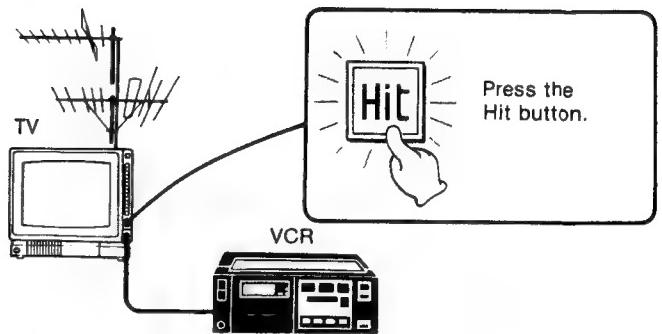


To record the TV program, connect the tuner timer unit (optional) to the antenna terminal on the TV's back panel instead of the Hit connector. For details on the connection, refer to the instructions of the portable VCR or the tuner timer unit.

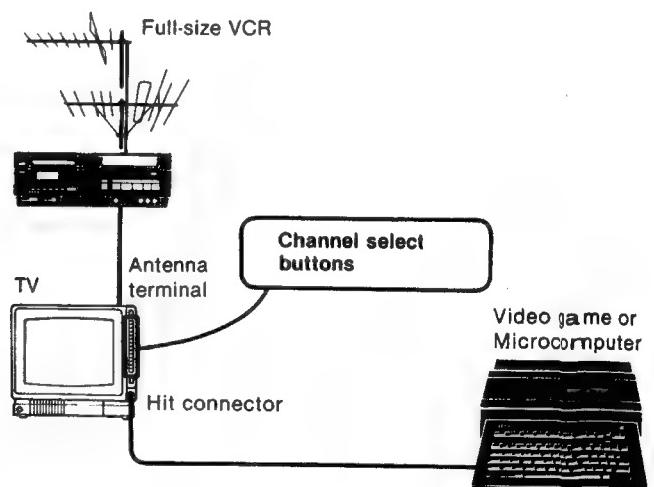
TO DISPLAY PICTURES FROM EQUIPMENT CONNECTED TO THE HIT CONNECTOR

Simply press the Hit button. The Hit button has been preadjusted to receive VHF channel 3. It is necessary to reset the channel in accordance to the type of equipment (RF output) to be connected. To readjust the channel, follow the instructions described in the "Channel presetting procedure" on page 8.

You can enjoy the pictures of a home video game or microcomputer which is connected to the Hit connector on the front panel, or relay to pictures from your portable VCR.



When you want to watch TV programs or playback picture from the VCR connected to the antenna terminal on the back, press the channel select buttons. If the picture is distorted, turn off the VCR.



1-5. CHANNEL PRESETTING

Your Sony TV has been factory-preset to receive VHF channels 2 through 13 when you press the channel select buttons and to receive VHF channel 3 for the Hit button.

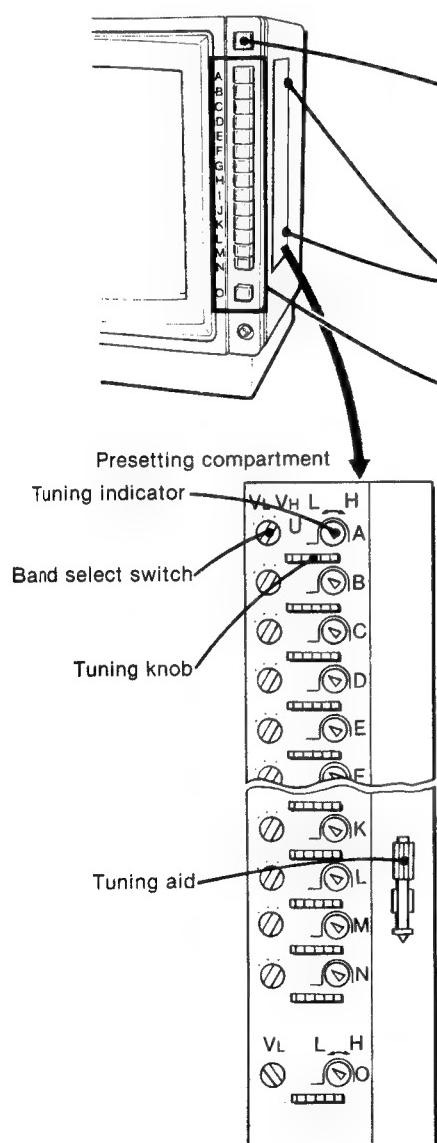
When you readjust channels :

- to rearrange channels in your desired sequence
- to add any receivable UHF channels in your area
- to display signals from the equipment connected to the Hit connector on the front panel; follow the instructions of the "Presetting Procedure."

NOTES

- If you own a video cassette recorder, we recommend that you not reset channel 3 or 4 — whichever is inactive in your area — but use it to receive signals from the video cassette recorder.
- Readjust the VHF channel (ch. 2 - 6) of the Hit button according to the type of equipment (RF output) to be connected.
- To use your TV set with a cable television system, contact a representative of the cable company for instructions regarding channel selection.

PRESETTING PROCEDURE



Factory preset

A	2
B	3
C	4
D	5
E	6
F	7
G	8
H	9
I	10
J	11
K	12
L	13
M	**
N	**

UHF channels can be preset on these two positions. If there are more UHF channels to receive, the presently unused positions among the positions 2-13 may be used.

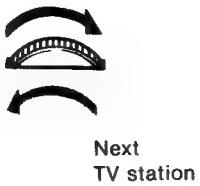
O **Hit** ← Channel 3 for the Hit button

Channel select buttons	Hit button
1 Depress the POWER switch.	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
	Turn on the equipment connected to the Hit connector (Play back a prerecorded tape if it is a VCR.)
2 Pull the tabs to remove the compartment lid and expose the controls.	
3 Select the channel to be preset. Use the controls having the same letter as the selected channel button.	Press the Hit button. Use the controls having the letter O.
4 Using the supplied tuning aid, set the band select switch to one of these three positions:  VH channels 2 through 6...set to VL VHF channels 7 through 13...set to VH UHF channels 14 to 83...set to U	The band select switch of the letter "O" is fixed to VL (VHF ch. 2 - 6). Do not attempt to turn the band select switch.
5 Turn the tuning knob until... the desired station...	the signals fed from the Hit connector...
	is properly tuned in.
The tuning indicator provides a visual indication of the approximate location you are tuned to within the selected band. L (to the left) for lower-numbered channels H (to the right) for higher-numbered channels	

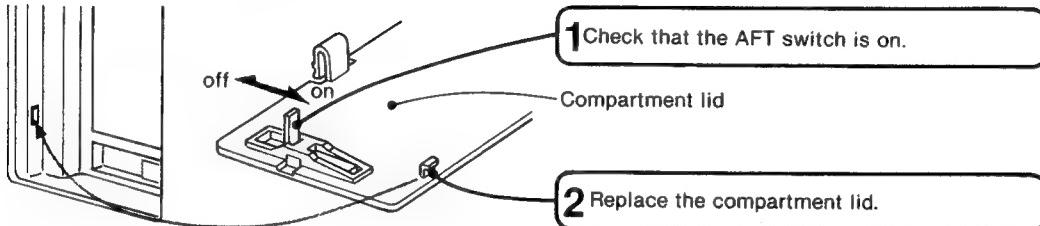
Repeat steps 3 through 5 for all the channel positions to be preset.

FINE TUNING

When the picture appears, slowly turn the tuning knob to the right until a herringbone pattern appears in the colored part of the picture. Then turn it in the opposite direction until the herringbone pattern just disappears and the picture becomes clear. This is the correct tuning point.



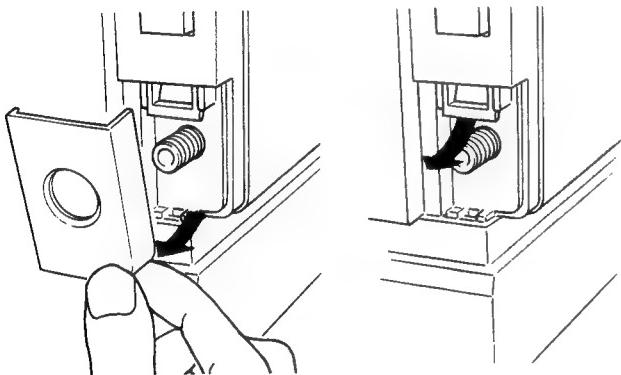
When the adjustment has been completed,



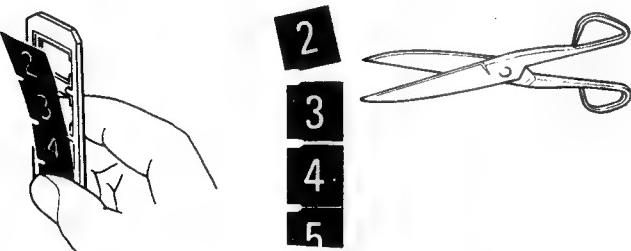
The AFT (Automatic Fine Tuning) circuit then locks in the received signal and maintains the best possible picture.

TO REPLACE THE NUMBERS

- 1 Remove the connector cover and pull out the channel indicating plate from the channel window.

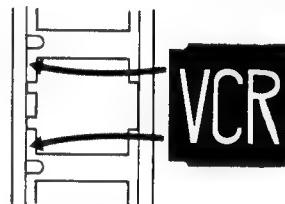


- 2 Remove the numbers and cut off any unnecessary numbers.

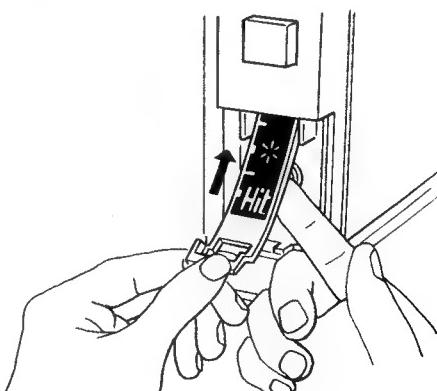


- 3 Insert the new number(s) selected from the supplied number segment set in the appropriate position(s).

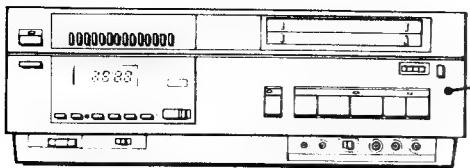
An asterisk (*) segment may be used to indicate an inactive channel.



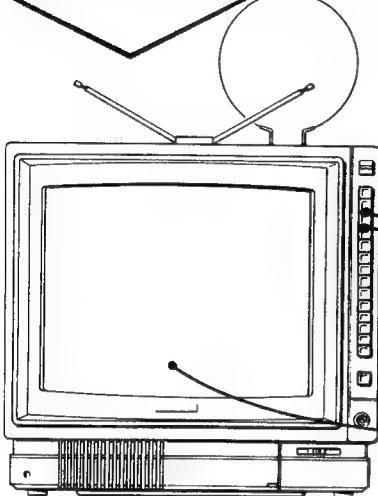
- 4 Replace the plate in the channel window. Handle the plate carefully so that you not drop the segment from the plate.



SETTING A CHANNEL ON THE TV FOR THE RECORDER



The signal from
the recorder will
be fed to the TV.



1 Adjusting the recorder

Set the rf unit channel selector to channel 3 or 4, whichever channel is not active in your area.

2 If you have a recorded tape

Set the recorder to the playback mode.

**2 If you do not have a
prerecorded tape**

Set the TV/VCR selector to VCR and select an active channel with its channel select button on the recorder.

3 Adjusting the TV

Select VHF channel 3 or 4* whichever corresponds to the recorder setting.

The playback of a recorded tape or a TV program selected with the recorder channel select button will appear.

If a picture does not appear on the TV screen or if the display is not clear, perform the usual presetting procedure (see page 8).



* If you have cancelled channel 3 or 4,
any other unused position may be used.

To preset channel 3 or 4 in any other unused position, proceed as follows.

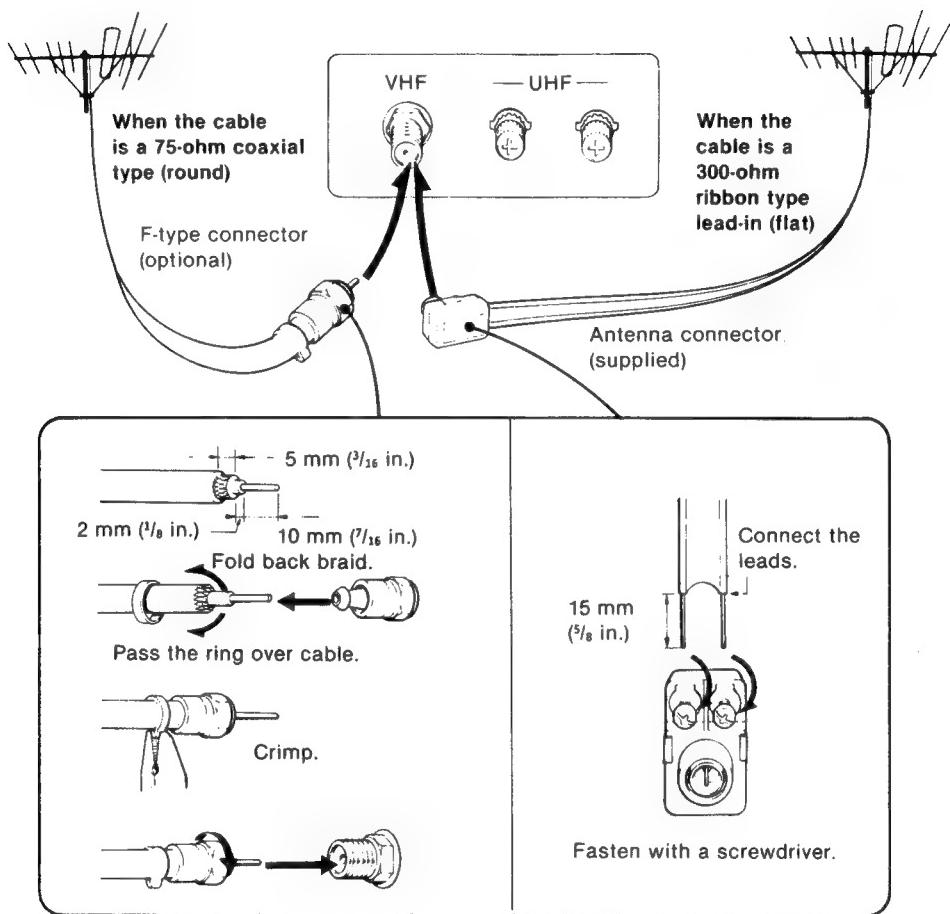
- 1 Open the presetting compartment lid and select the position to be preset.
- 2 Set the band select switch to VL.
- 3 Turn the tuning knob until the playback picture or the TV program selected with the recorder's channel select button is clearest.
- 4 Close the compartment lid.

1-6. EXTERNAL ANTENNA CONNECTION

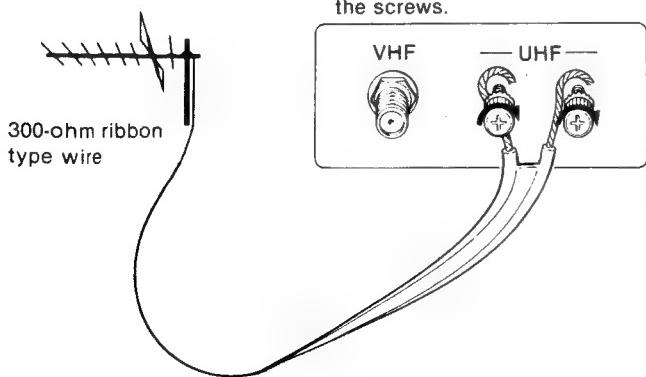
The indoor telescopic dipole antenna and loop antenna will provide good reception in most reception areas. If you cannot obtain satisfactory reception with them, the use of an outdoor antenna is recommended.

- 1 Remove the indoor antennas from the antenna terminals of the TV.
- 2 Connect an external antenna to the VHF or(and) UHF antenna terminal(s) corresponding to its form.

VHF antenna

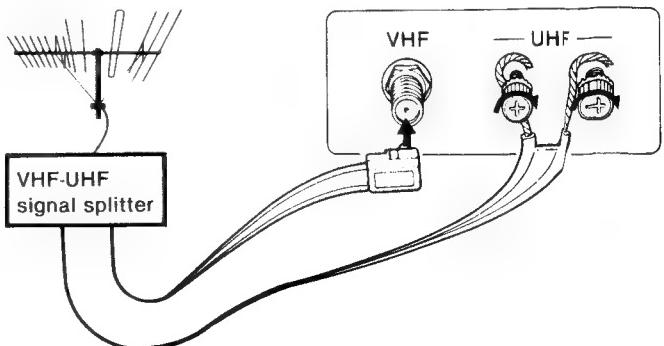


UHF antenna



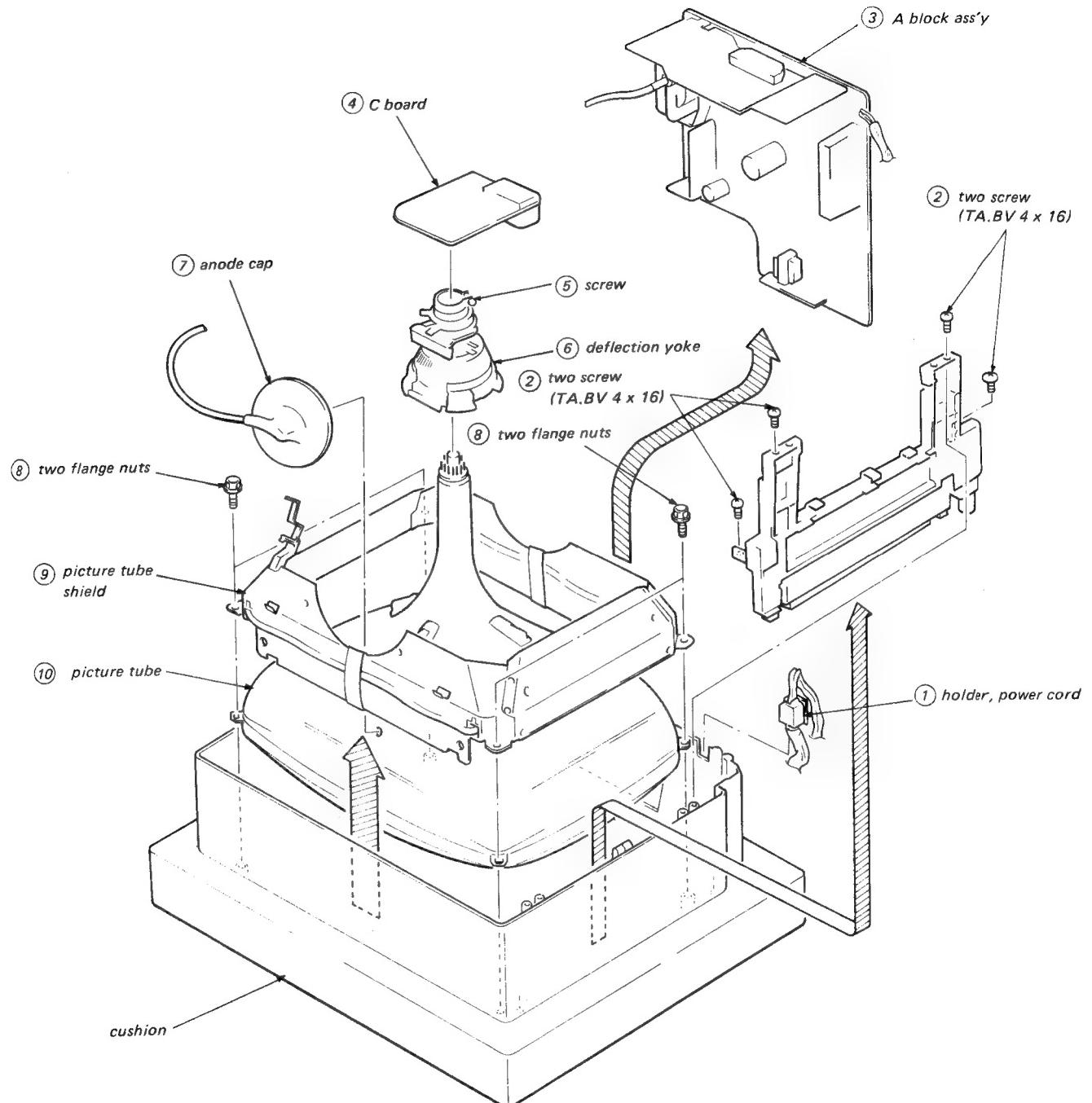
Combination VHF/UHF antenna

Most combination antennas already have a signal splitter. If you need a splitter or a complete antenna system, see your Sony dealer or a qualified technician.



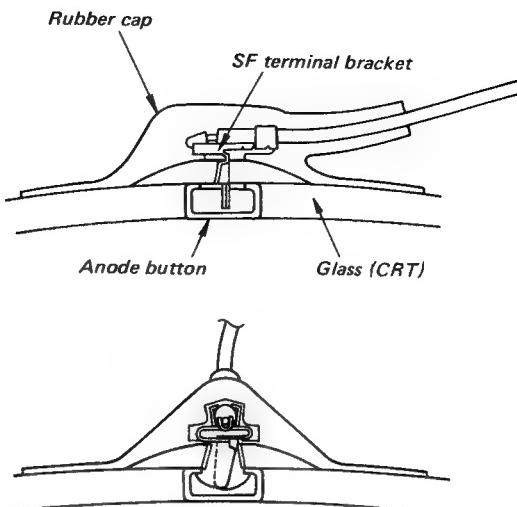
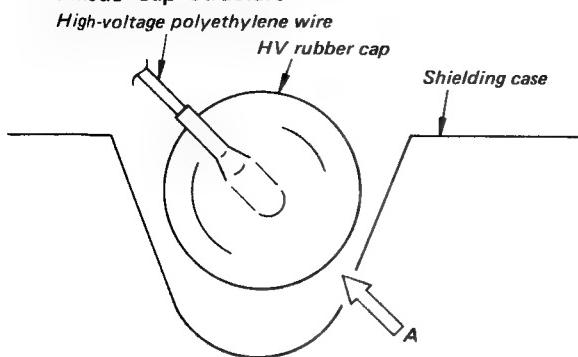
2. DISASSEMBLY

2-1. PICTURE TUBE REMOVAL



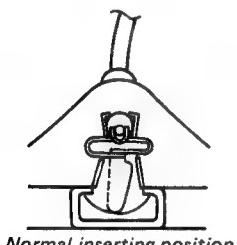
2-2. REMOVAL OF ANODE CAP

- Anode Cap Structure

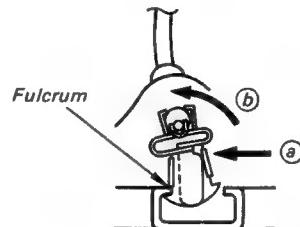


Cross section viewed from the arrow A

- Removal of SF Terminal

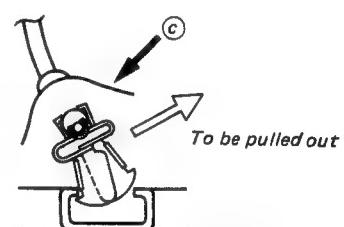


Normal inserting position



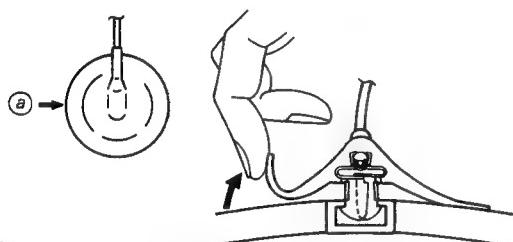
When pushing in the direction indicated by the arrow (a), the SF terminal tilts toward the fulcrum side due to the spring characteristic.

Remove it by pulling up in the direction indicated by the arrow (b) with the SF terminal tilted.

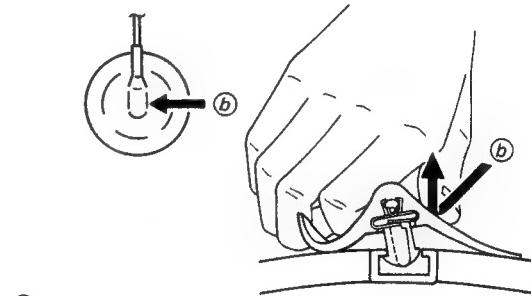
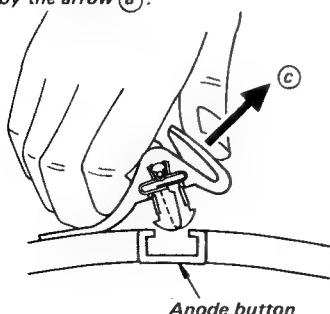


Tilt the SF terminal in the direction of the arrow (c) and pull out it in the direction (of 45°) indicated by the arrow.

- Removing Procedures



① Turn up one side of the rubber cap in the direction indicated by the arrow (a).



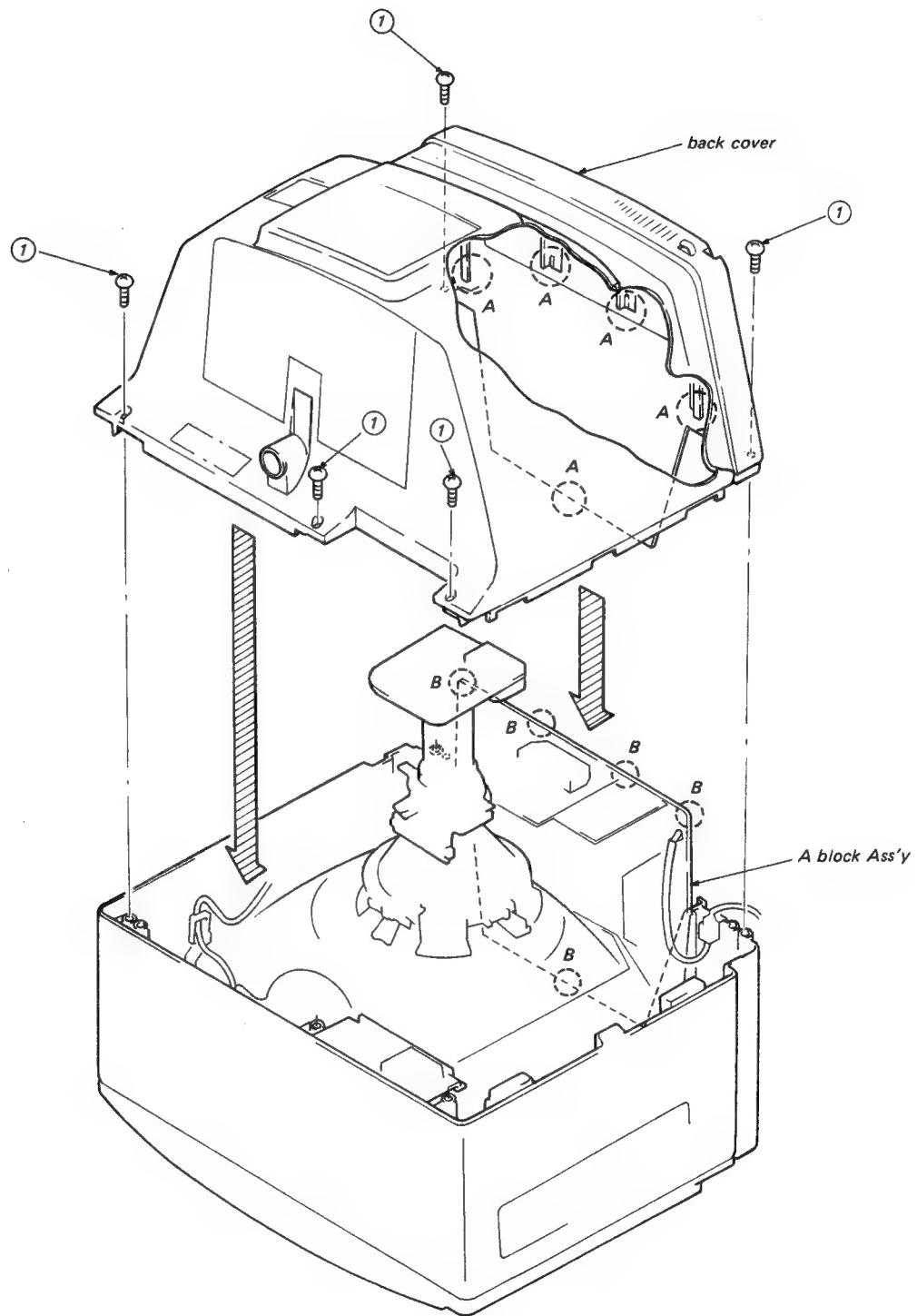
② Using a thumb, pull up the rubber cap firmly in the direction indicated by the arrow (b).

③ When one side of the rubber cap is separated from the anode button, the anode cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow (c).

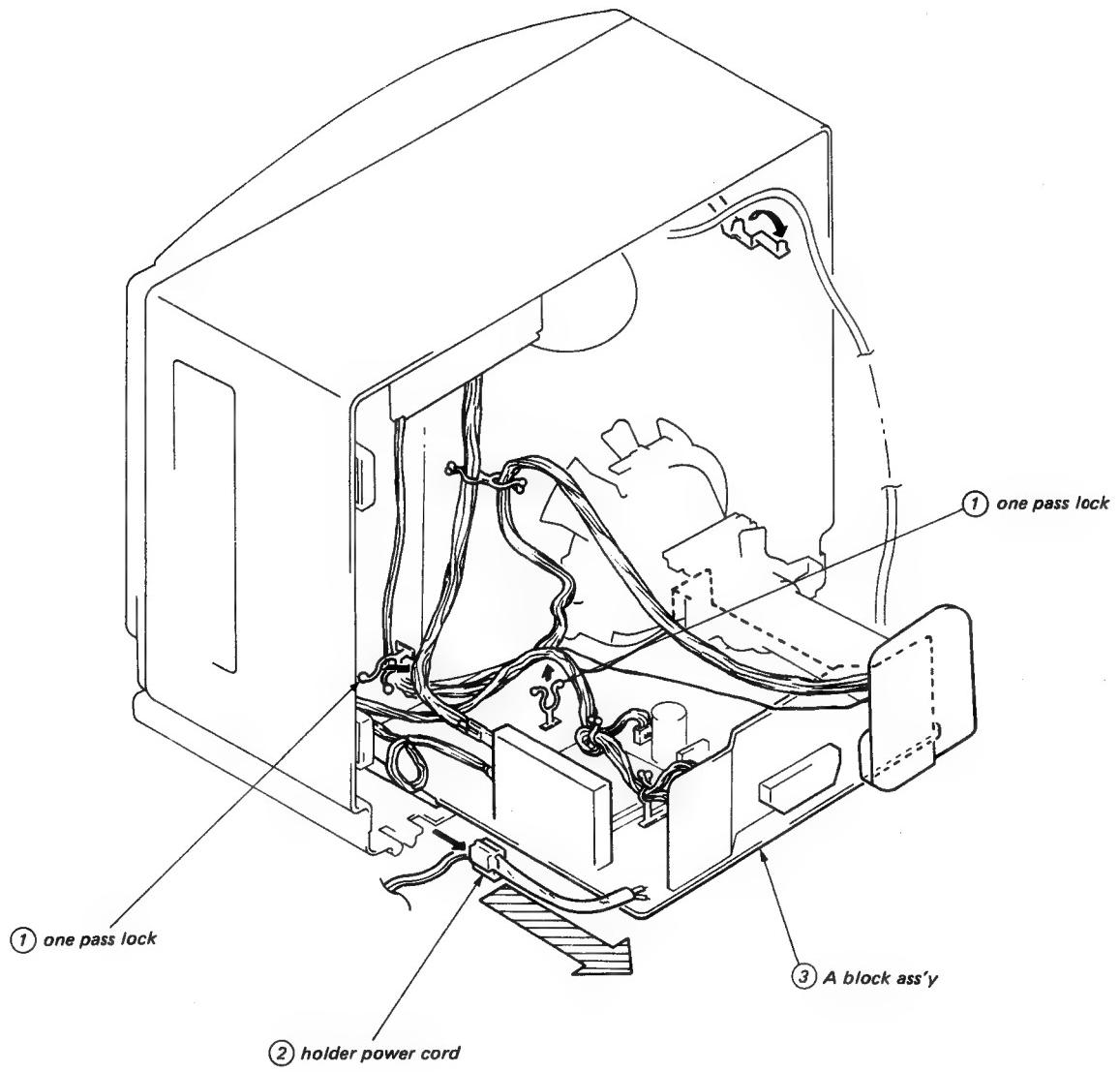
2-3. INSTALLATION OF BACK COVER

- ① Install the back cover by using the five screws
(BVTA 4 x 16)

Note: Insert each section A of the back cover
into the section B of the A block Ass'y.

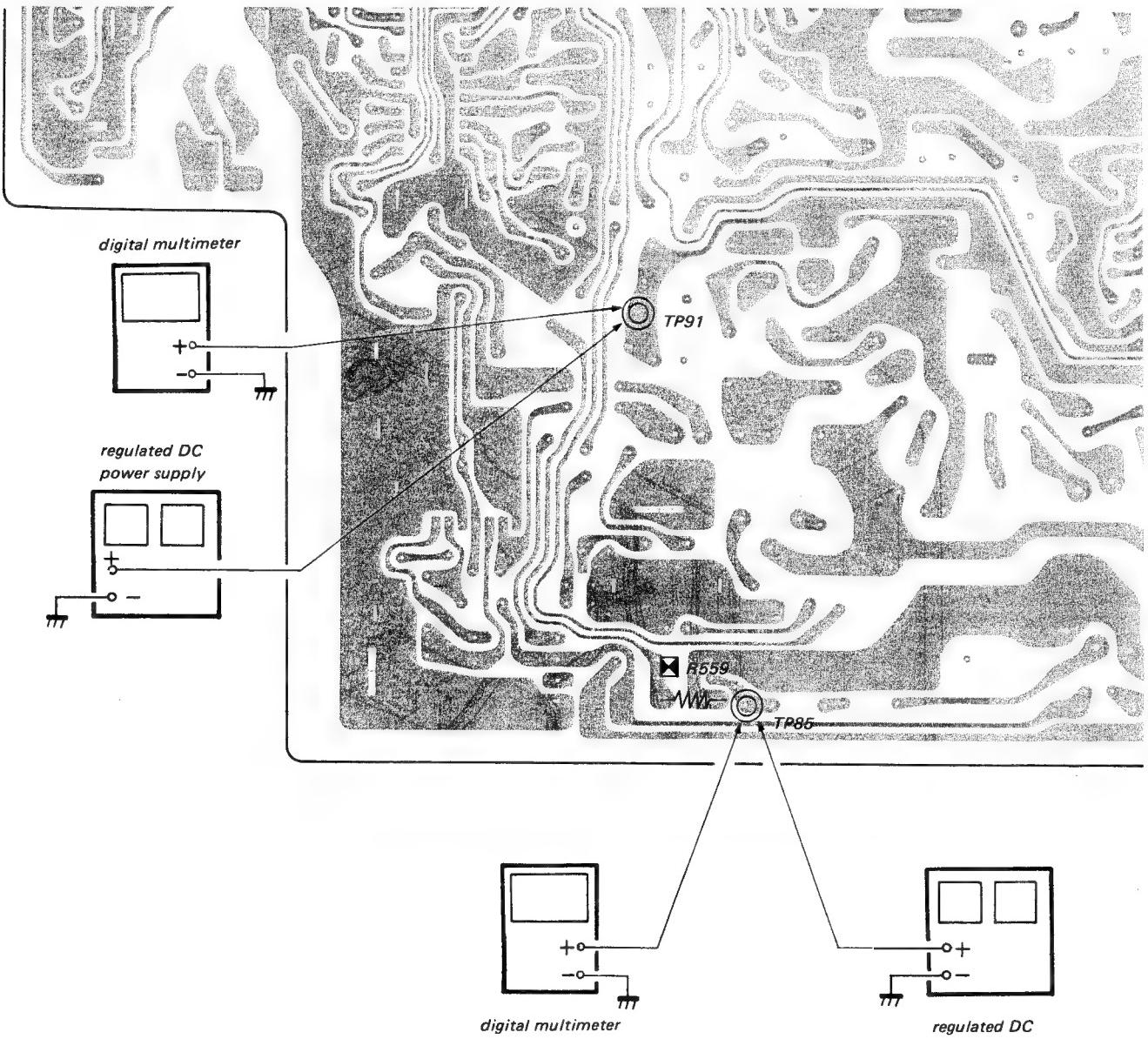


2-4. A-BLOCK ASSEMBLY REMOVAL



3. SAFETY RELATED ADJUSTMENTS

[A BOARD]



R559 ADJUSTMENT (HOLD DOWN)

When replacing the following components (marked with on the schematic diagram), perform the adjustment as follows:

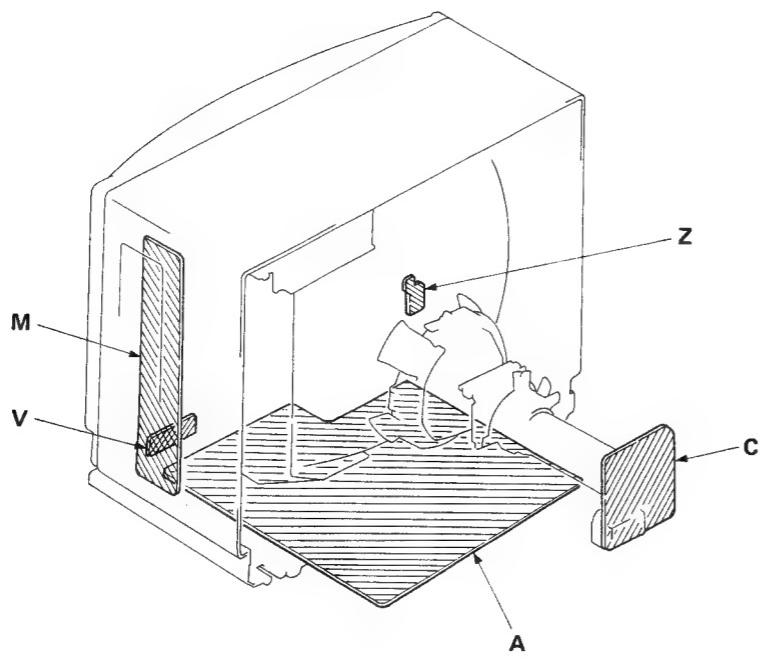
(IC501 D502 D512 R538 R544 R543 R539 R542 R541 R559)
(C553 C535)

[Adjustment]

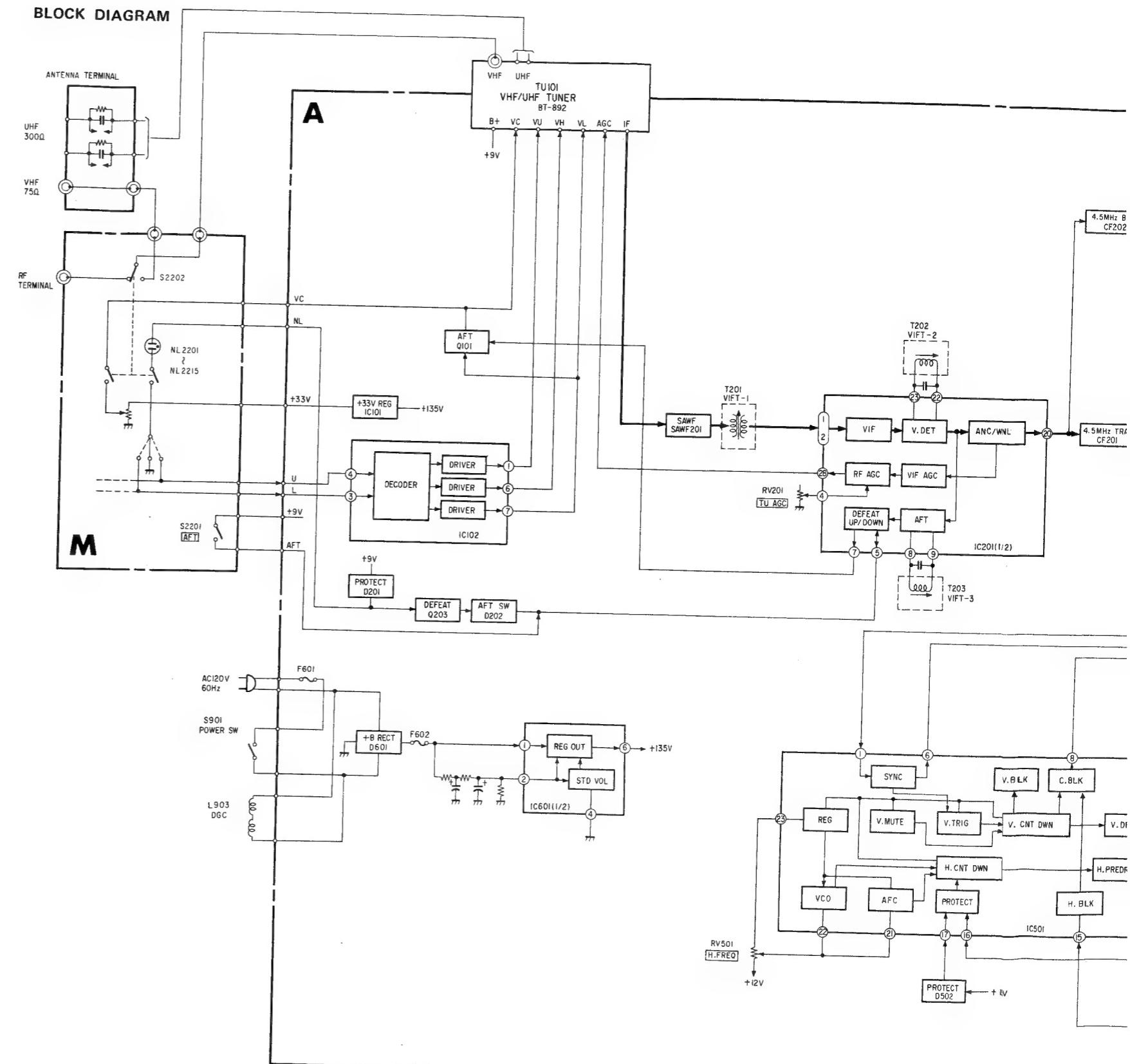
- 1) Receive the monoscope signal.
Set PIC VR at the center click position.
Set BRT VR at the center click position.
- 2) +B voltage check.
Confirm that the +B voltage (at TP91) is 137.0V or less during input of 130V AC.
- 3) Protector voltage check.
confirm that a voltage of $19.1 \pm 1.2V$ appears between TP85 and GND during input of 120V AC.
- 4) Operation check.
Confirm that the hold-down circuit operates (the raster disappears) by adding $22.95^{+0}_{-0.05}$ V DC between TP85 and GND.
- 5) Receive the dot signal.
- 6) Short-circuit between pins ① and ⑥ of IC601.
- 7) Error operation check.
Confirm that the hold-down circuit does not operate by adding $140 \pm 1V$ DC to +B voltage (at TP91) to charge over the CH.

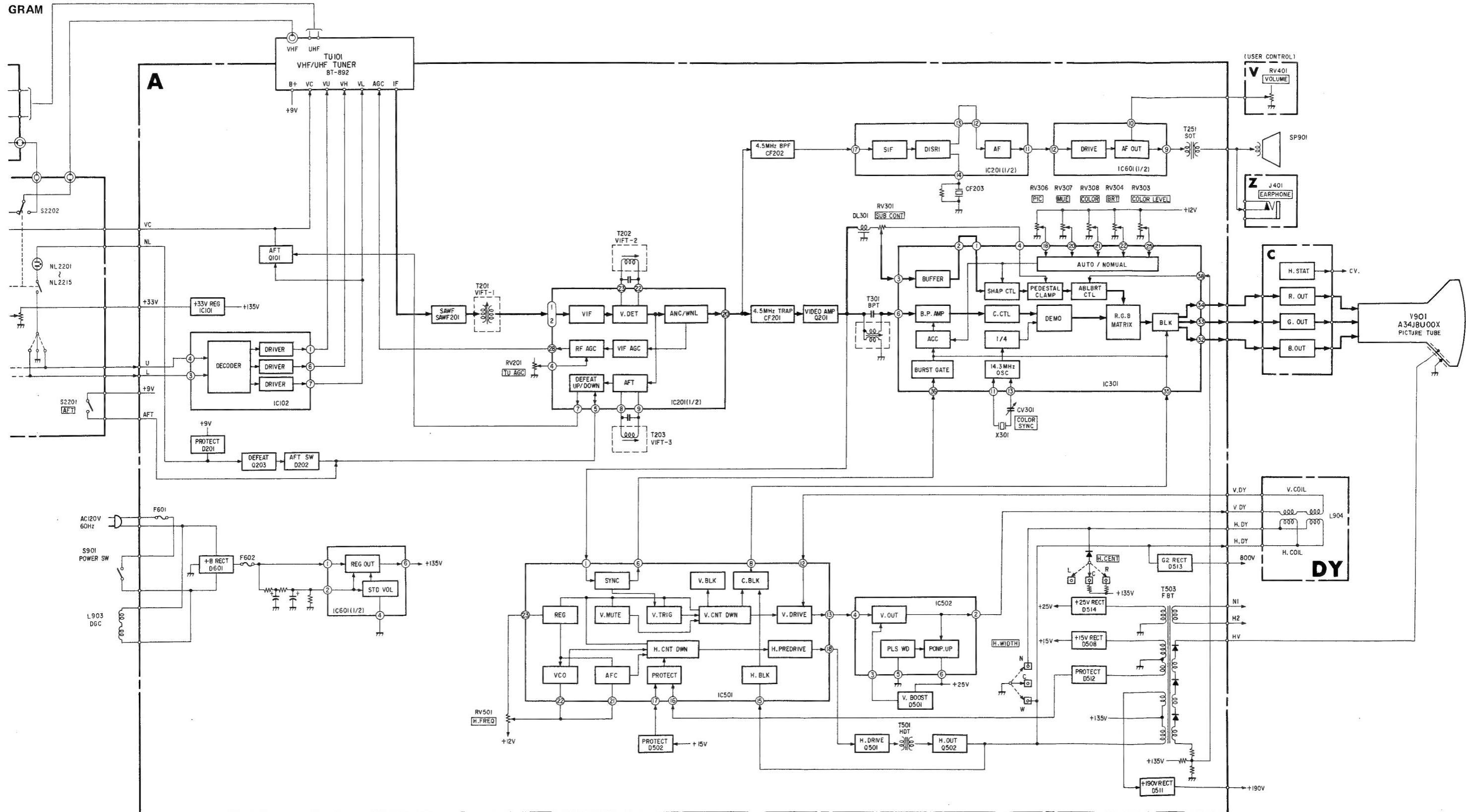
4. DIAGRAMS AND CIRCUIT BOARD LOCATION

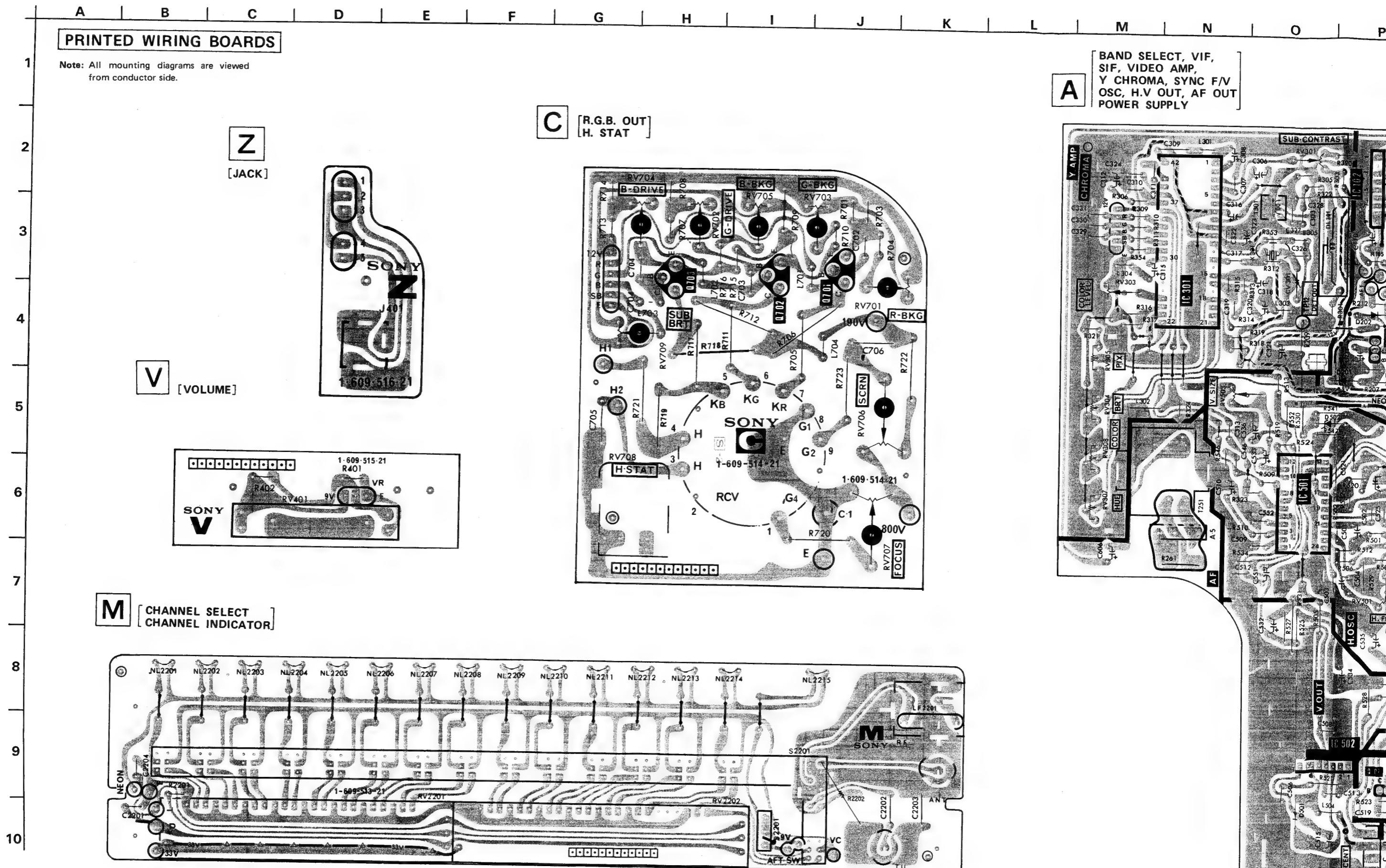
CIRCUIT BOARDS LOCATION



BLOCK DIAGRAM

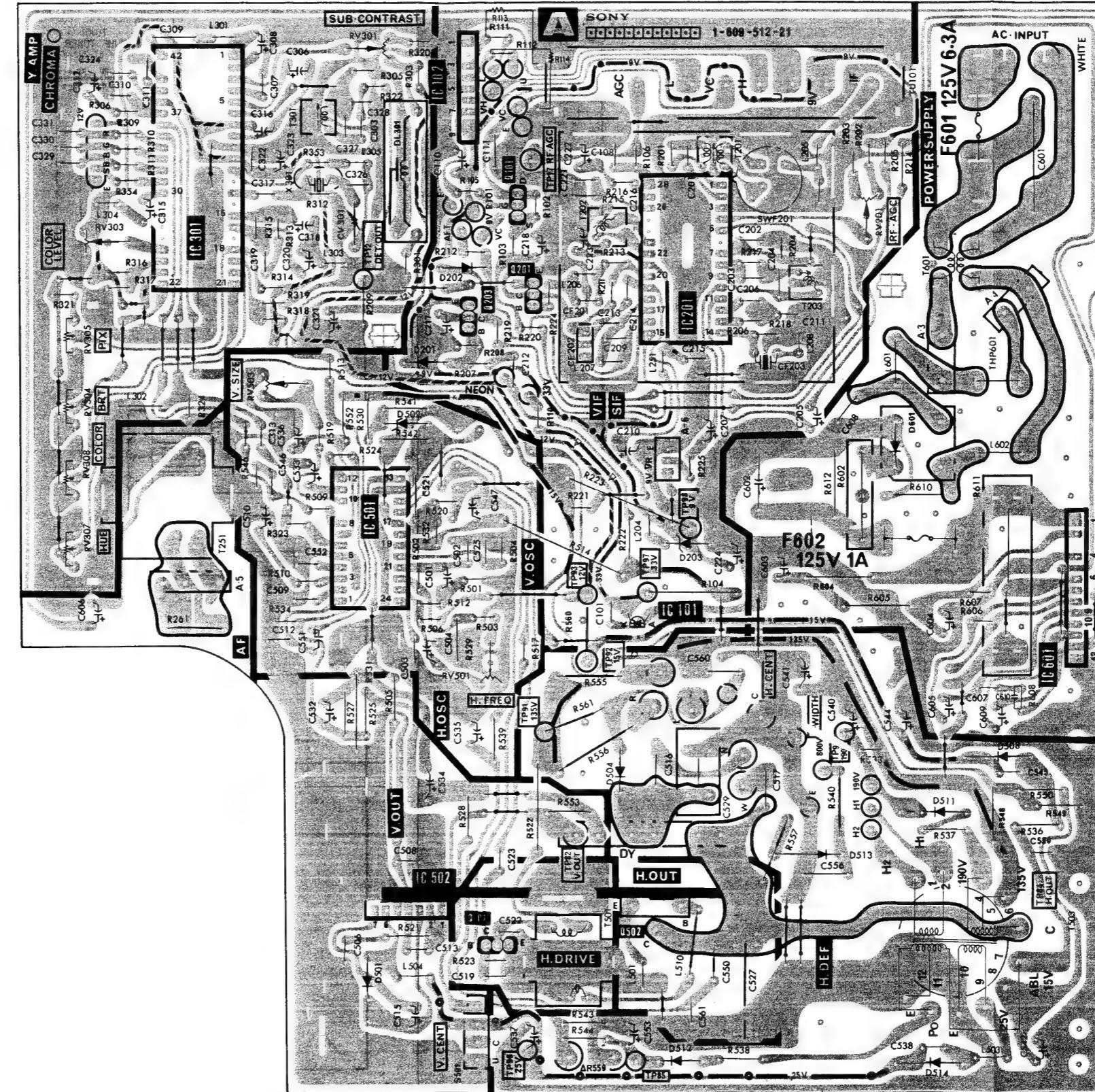
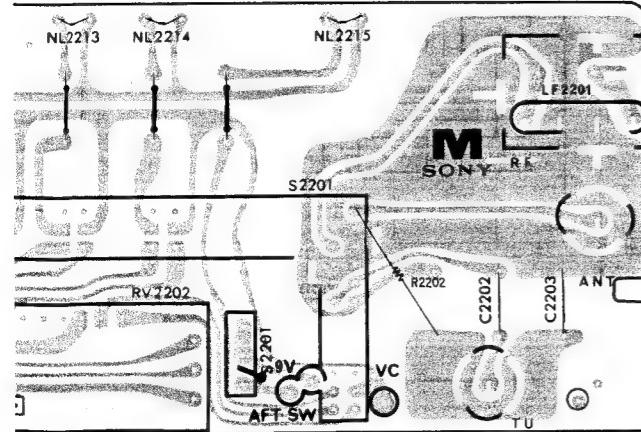
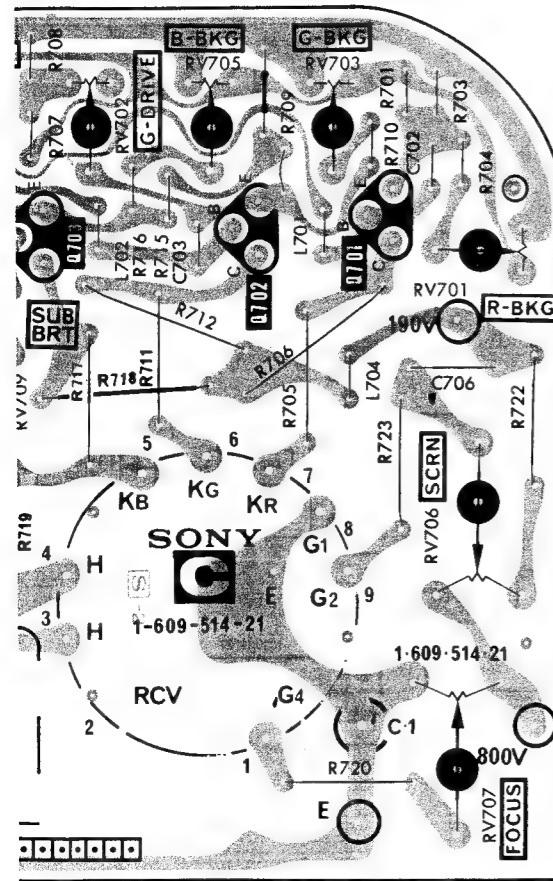




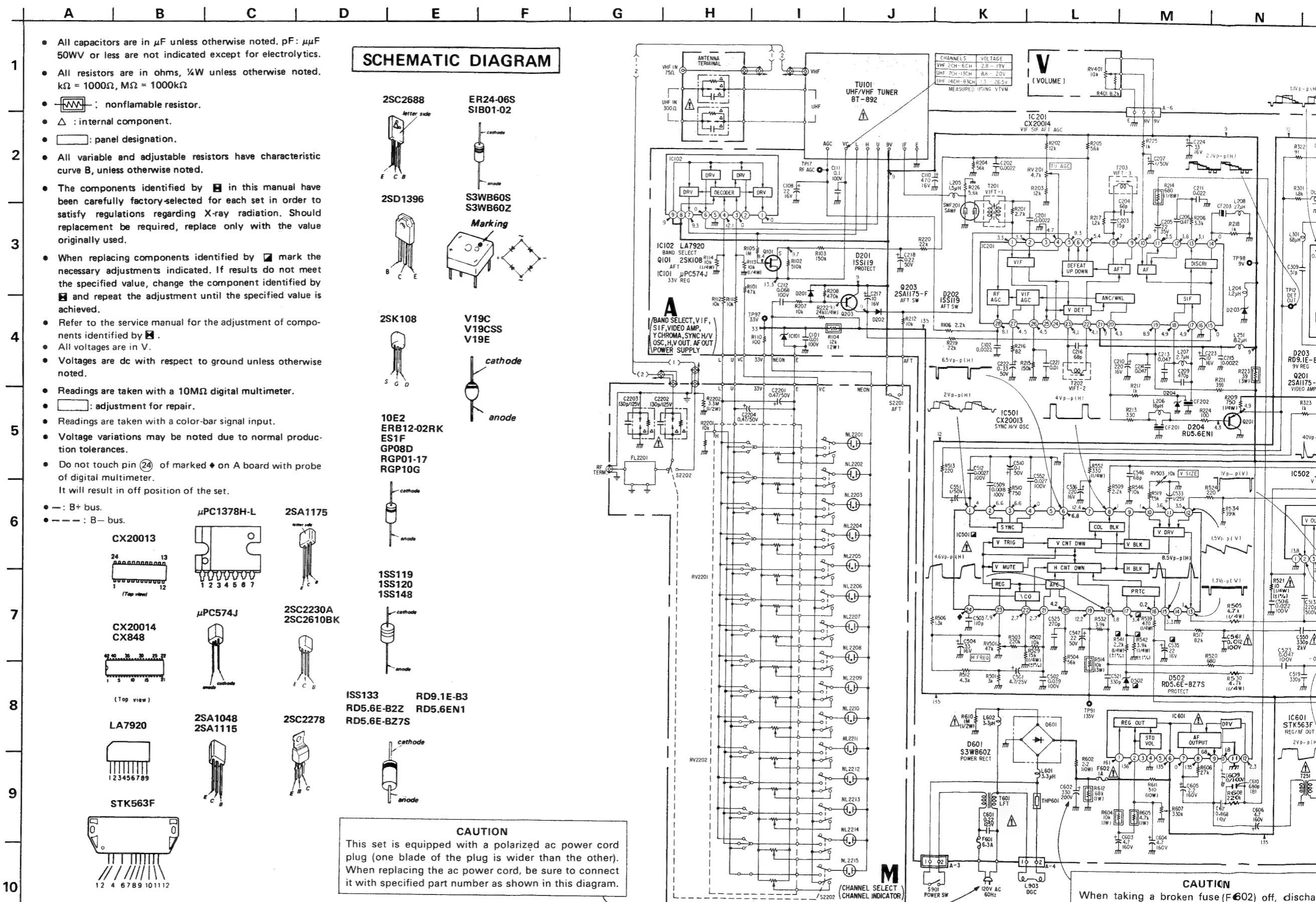


H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W

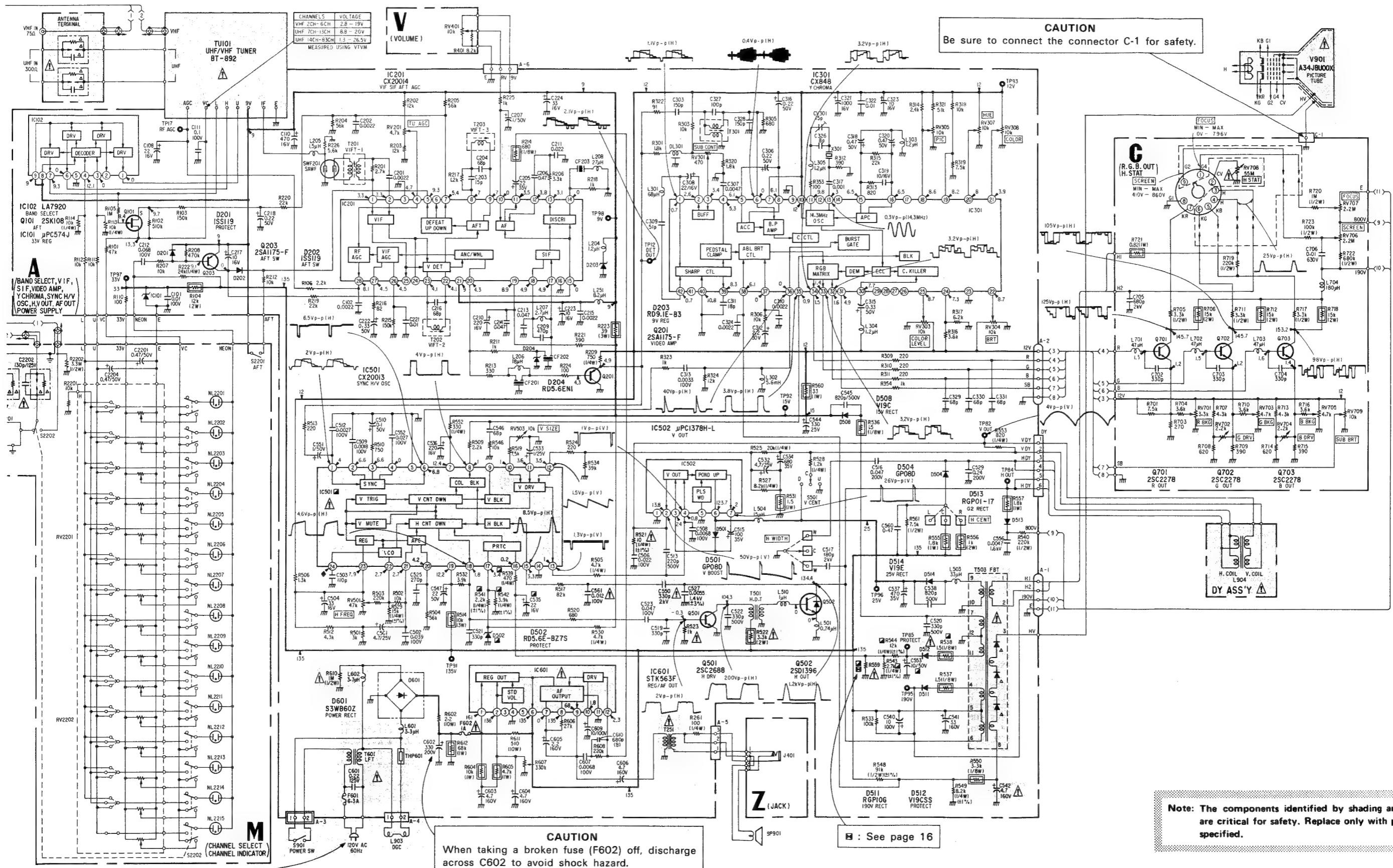
BAND SELECT, VIF,
SIF, VIDEO AMP,
Y CHROMA, SYNC F/V
OSC, H.V OUT, AF OUT
POWER SUPPLY



IC - Q.	D	ADJ	TP
IC102		RV301	
IC301			17
101		CV301 RV201	
IC201		RV303	i2
201	202		
203		RV305	
	201	RV503	
	502	RV304	
	601	RV308	
IC501	203	RV307	98
IC601			93.97
IC101		RV501	92
			91
			95
	508		
	511		
	513		82
IC502			84
501 502			
	501		
	512		85
	514		96



H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W



5. EXPLODED VIEWS

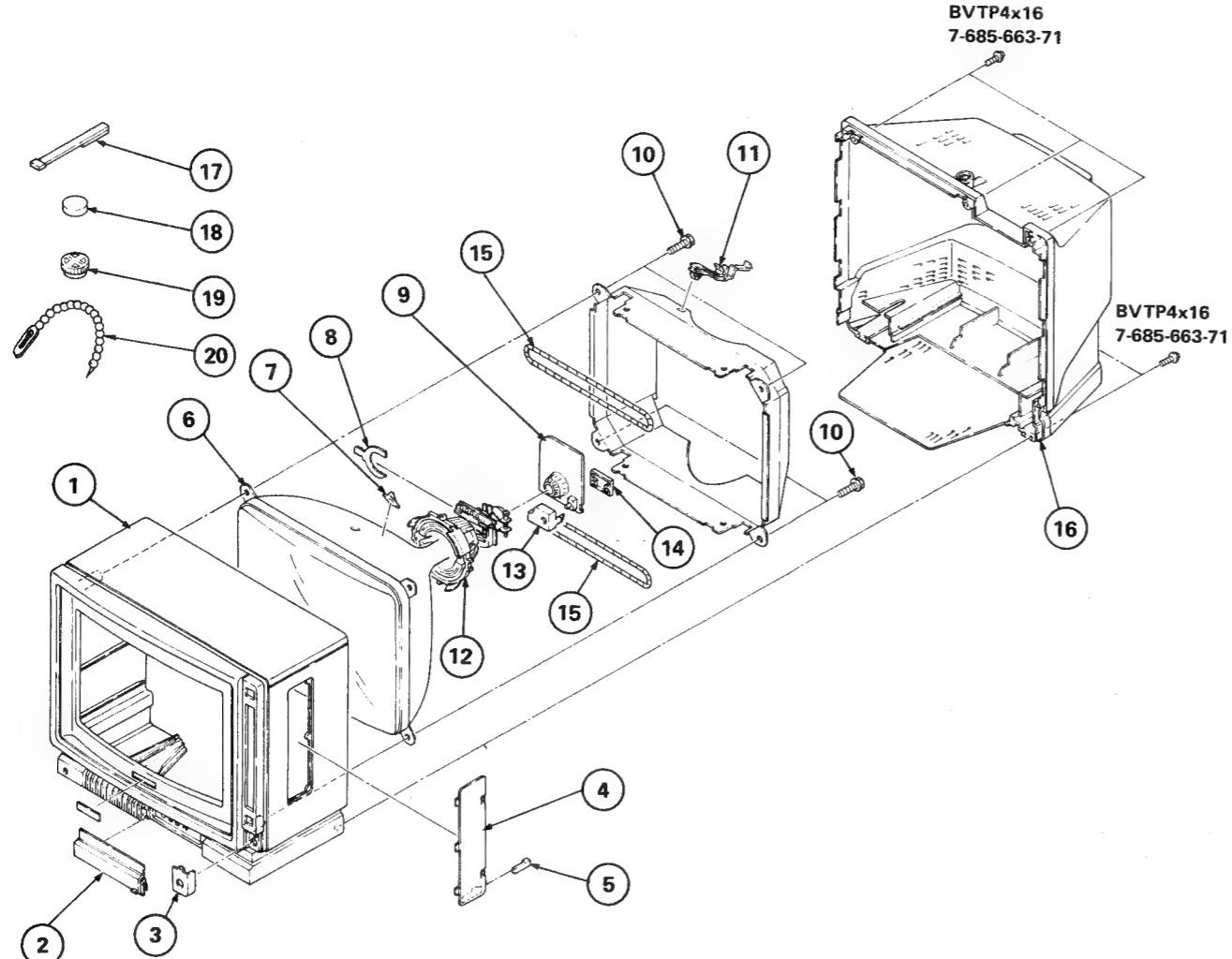
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a callout number in the remark column.

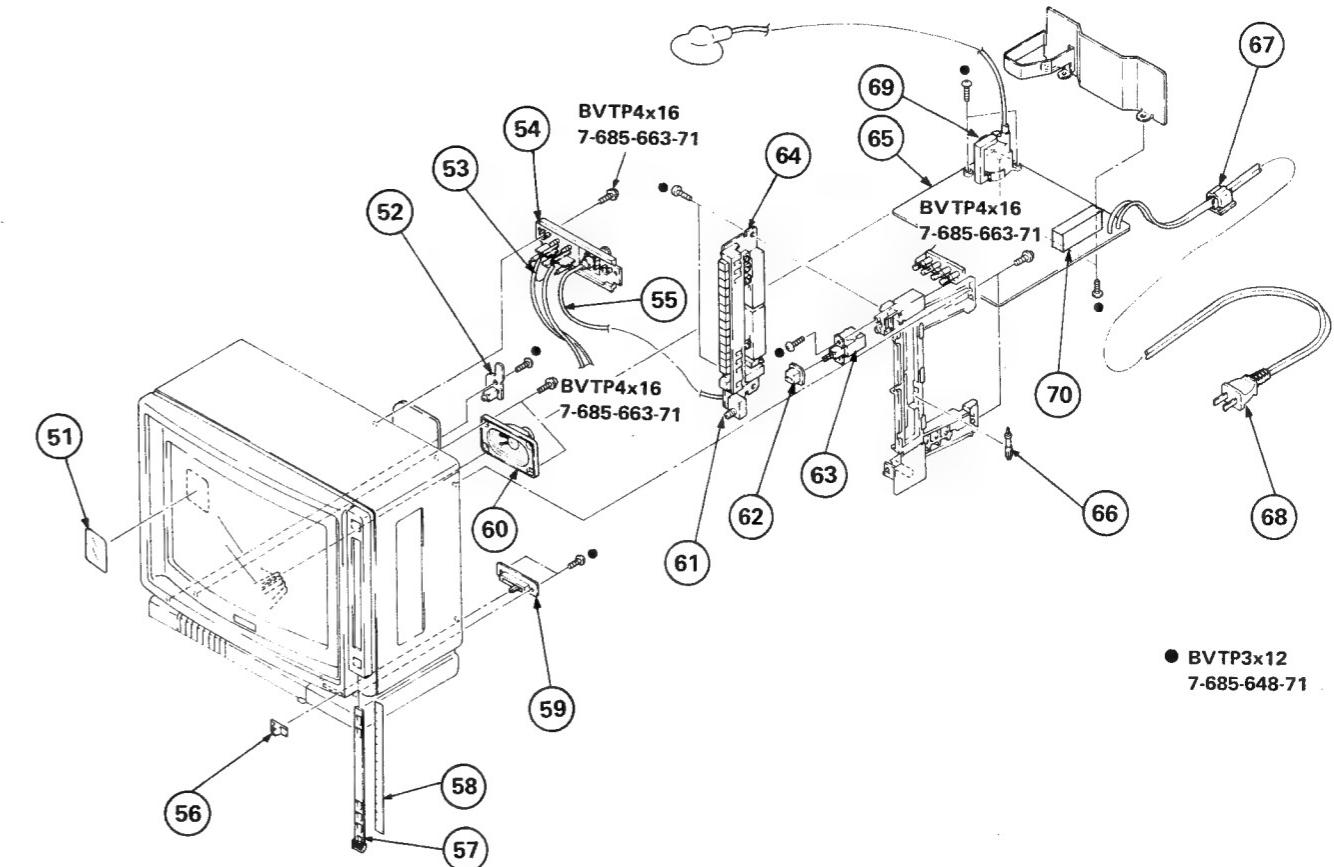
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

1. BEZEL



2. CABINET



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-4366-503-2	BEZEL ASSY (KV-1331 MODEL)		2	10	4-365-808-00	SCREW (5), TAPPING	51	3-703-705-01	STICKER, SONY SYMBOL (30)	
	X-4366-503-0	BEZEL ASSY (KV-1332 MODEL)		2	11	▲:4-346-339-00	HOLDER, HV CABLE	52	▲:1-609-516-21	Z BOARD	
2	4-365-821-00	DOOR, CONTROL		12	▲:1-451-234-00	DEFLECTION YOKE (SY-125A)		53	▲:1-556-375-21	FEEDER (WITH TERMINAL)	
3	4-365-817-51	COVER, TERMINAL (KV-1331 MODEL)		13	▲:4-365-803-00	COVER (MAIN), CV CONTROL		54	▲:1-536-790-21	TERMINAL BOARD ASSY, ANTENNA	
4	4-365-817-41	COVER, TERMINAL (KV-1332 MODEL)		14	▲:4-365-804-00	COVER (REAR LID), CV CONTROL		55	▲:1-556-870-00	CABLE (WITH F CONTACT)	
4	X-4366-502-2	DOOR ASSY, PRESET (KV-1331 MODEL)	5	15	▲:1-426-146-00	COIL, DEGAUSSING		56	4-365-801-00	KNOB, CONTROL	
	X-4366-502-0	DOOR ASSY, PRESET (KV-1332 MODEL)	5	16	4-366-506-00	COVER, BACK (KV-1332 MODEL)		57	4-365-819-01	HOLDER, LABEL (KV-1332 MODEL)	
5	4-365-105-00	KNOB, AFT		16	4-366-506-11	COVER, BACK (KV-1331 MODEL)		58	4-366-505-01	LABEL (A), INDICATOR (KV-1332 MODEL)	
6	▲:8-735-550-05	CRT (A34JBU00X)		17	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE		59	▲:1-609-515-21	V BOARD	
7	3-703-003-00	SPACER, DY		18	1-452-032-00	MAGNET, DISK 10mm ⁶		60	1-503-239-00	SPEAKER	
8	1-452-277-00	MAGNET, BMC		19	1-452-094-00	MAGNET, ROTATABLE DISK, 15mm ⁶		61	1-562-289-00	CONTACT, F	
9	▲:A-1330-417-A	C BOARD, COMPLETE		20	4-308-870-00	CLIP, LEAD WIRE		62	4-365-802-00	BUTTON, POWER	

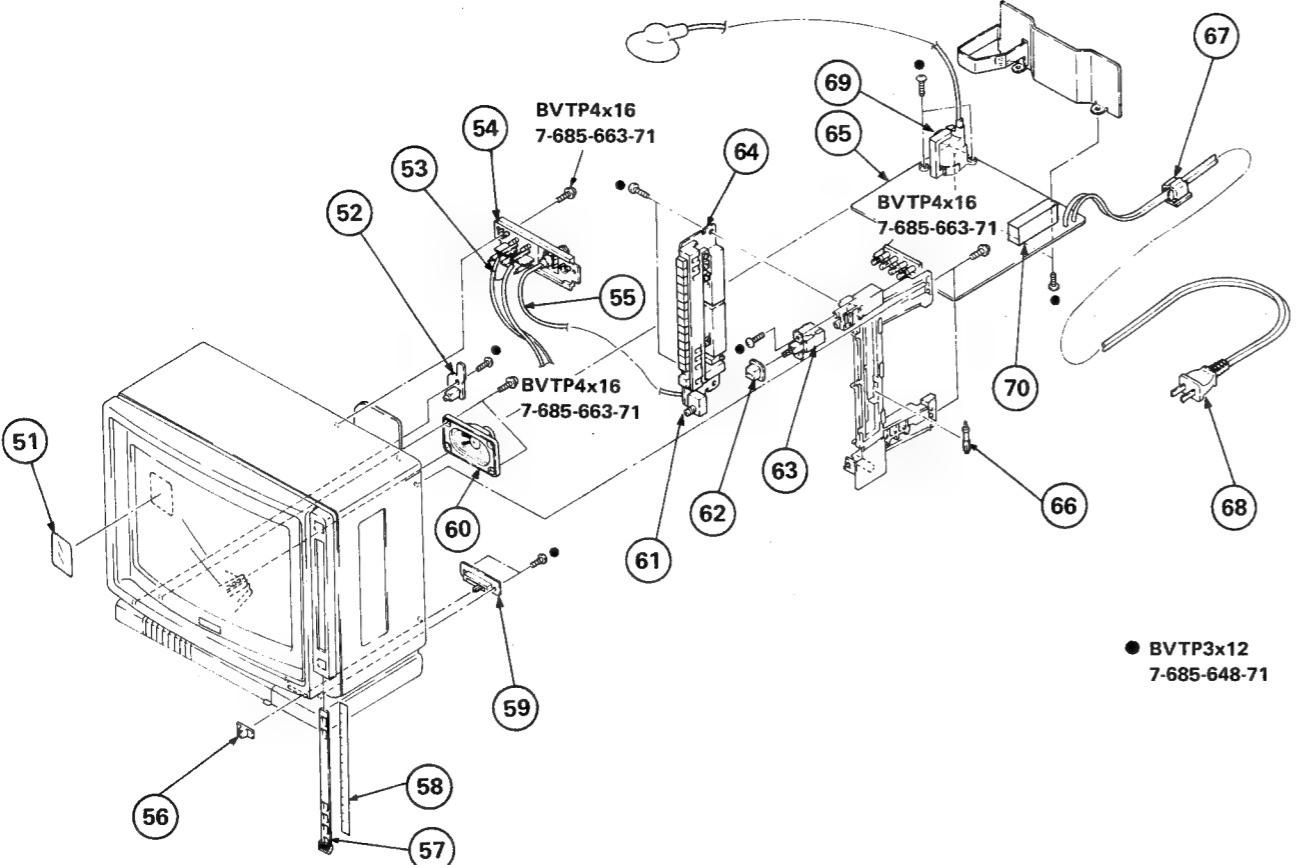
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	3-703-705-01	STICKER, SONY SYMBOL (30)		60	1-503-239-00	SPEAKER		60	1-503-239-00	SPEAKER	
52	▲:1-609-516-21	Z BOARD		61	1-562-289-00	CONTACT, F		61	1-562-289-00	CONTACT, F	
53	▲:1-556-375-21	FEEDER (WITH TERMINAL)		62	4-365-802-00	BUTTON, POWER		62	4-365-802-00	BUTTON, POWER	
54	▲:1-536-790-21	TERMINAL BOARD ASSY, ANTENNA		63	▲:1-554-471-00	SWITCH, PUSH (AC POWER)		63	▲:1-554-471-00	SWITCH, PUSH (AC POWER)	
55	▲:1-556-870-00	CABLE (WITH F CONTACT)		64	▲:1-609-513-00	M BOARD		64	▲:1-609-513-00	M BOARD	
56	4-365-801-00	KNOB, CONTROL		65	▲:A-1295-697-A	A BOARD, COMPLETE		65	▲:A-1295-697-A	A BOARD, COMPLETE	
57	4-365-819-01	HOLDER, LABEL (KV-1332 MODEL)		66	4-365-250-00	SCREWDRIVER, PRESET		66	4-365-250-00	SCREWDRIVER, PRESET	
58	4-366-505-01	LABEL (A), INDICATOR (KV-1332 MODEL)		67	▲:4-022-115-00	HOLDER, AC CORD		67	▲:4-022-115-00	HOLDER, AC CORD	
59	▲:1-609-515-21	V BOARD		68	▲:1-551-603-00	CORD, POWER		68	▲:1-551-603-00	CORD, POWER	
				69	▲:1-439-314-00	TRANSFORMER ASSY FLYBACK		69	▲:1-439-314-00	TRANSFORMER ASSY FLYBACK	
				70	▲:1-463-445-00	TUNER, ET (BT-892)		70	▲:1-463-445-00	TUNER, ET (BT-892)	

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

A

6. ELECTRICAL PARTS LIST

2. CABINET



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	3-703-705-01	STICKER, SONY SYMBOL (30)		60	1-503-239-00	SPEAKER	
52	1-609-516-21	Z BOARD		61	1-562-289-00	CONTACT, F	
53	1-556-375-21	FEEDER (WITH TERMINAL)		62	4-365-802-00	BUTTON, POWER	
54	1-536-790-21	TERMINAL BOARD ASSY, ANTENNA		63	1-554-471-00	SWITCH, PUSH (AC POWER)	
55	1-556-870-00	CABLE (WITH F CONTACT)		64	1-609-513-00	M BOARD	
56	4-365-801-00	KNOB, CONTROL		65	1-1295-697-A	A BOARD, COMPLETE	
57	4-365-819-01	HOLDER, LABEL (KV-1332 MODEL)		66	4-365-250-00	SCREWDRIVER, PRESET	
58	4-366-505-01	LABEL (A), INDICATOR (KV-1332 MODEL)		67	4-022-115-00	HOLDER, AC CORD	
59	1-609-515-21	V BOARD		68	1-551-603-00	CORD, POWER	

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

NOTE:

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

RESISTORS
• All resistors are in ohms
• F : nonflammable

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
• MF : μ F, PF : $\mu\mu$ F

COILS
• MMH : μ H, UH : μ H

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
●:A-1295-697-A	A BOARD, COMPLETE			C310	1-161-043-00	CERAMIC	0.0022MF 10% 50V
	*****			C311	1-102-953-00	CERAMIC	18PF 5% 50V
●:1-508-784-00	1P PLUG			C312	1-123-381-00	ELECT	2.2MF 20% 50V
●:1-508-784-00	1P PLUG			C313	1-108-371-00	MYLAR	0.0033MF 10% 100V
●:1-508-784-00	1P PLUG			C315	1-123-286-00	ELECT	0.33MF 20% 50V
●:1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P			C316	1-123-447-00	ELECT	0.22MF 20% 50V
●:1-941-001-01	CONNECTOR ASSY, MINIATURE 1P			C317	1-102-074-00	CERAMIC	0.001MF 10% 50V
●:1-941-001-02	CONNECTOR ASSY, MINIATURE 1P			C318	1-123-379-00	ELECT	0.47MF 20% 50V
●:4-363-404-00	HOLDER, IC			C319	1-121-259-51	ELECT	10MF 16V
●:4-363-414-00	SPACER, MICA			C320	1-123-379-00	ELECT	0.47MF 20% 50V
●:4-365-811-00	CASE (MAIN), SHIELD, VIF			C321	1-123-324-00	ELECT	1000MF 20% 16V
●:4-365-812-00	LID, UPPER, SHIELD CASE, VIF			C322	1-101-004-00	CERAMIC	0.01MF 50V
●:4-365-813-00	LID, BOTTOM, SHIELD CASE, VIF			C323	1-123-356-00	ELECT	10MF 20% 16V
	CONNECTOR			C324	1-161-043-00	CERAMIC	0.0022MF 10% 50V
A3	●:1-506-371-00	2P PLUG (L)		C326	1-102-865-00	CERAMIC	8PF 0.5PF 50V
A4	●:1-508-786-00	2P PLUG (M)		C327	1-102-973-00	CERAMIC	100PF 5% 50V
A5	●:1-508-765-00	3P PLUG (M)		C328	1-102-108-00	CERAMIC	150PF 10% 50V
A6	●:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P		C329	1-101-888-00	CERAMIC	68PF 5% 50V
	CAPACITOR			C330	1-101-888-00	CERAMIC	68PF 5% 50V
C101	1-108-377-00	MYLAR	0.01MF 10% 100V	C501	1-123-328-00	ELECT	4.7MF 20% 25V
C102	1-102-121-00	CERAMIC	0.0022MF 10% 50V	C502	1-108-384-00	MYLAR	0.039MF 10% 100V
C108	1-123-330-00	ELECT	22MF 20% 16V	C503	1-102-922-00	CERAMIC	110PF 5% 50V
C110	1-123-323-00	ELECT	470MF 20% 16V	C504	1-123-318-00	ELECT	33MF 20% 16V
C111	1-108-389-00	MYLAR	0.1MF 10% 100V	C506	1-108-381-00	MYLAR	0.022MF 10% 100V
C201	1-102-121-00	CERAMIC	0.0022MF 10% 50V	C508	1-108-375-00	MYLAR	0.0068MF 10% 100V
C202	1-102-121-00	CERAMIC	0.0022MF 10% 50V	C509	1-108-368-00	MYLAR	0.0018MF 10% 100V
C203	1-102-851-00	CERAMIC	15PF 5% 50V	C510	1-123-586-00	ELECT	0.1MF 20% 50V
C204	1-102-525-00	CERAMIC	68PF 5% 50V	C512	1-108-370-00	MYLAR	0.0027MF 10% 100V
C205	1-123-342-00	ELECT	22MF 20% 35V	C513	1-102-244-00	CERAMIC	220PF 10% 500V
C206	1-123-021-00	ELECT	0.47MF 30% 50V	C515	1-123-345-00	ELECT	100MF 20% 35V
C207	1-123-380-00	ELECT	1MF 20% 50V	C516	1-108-429-00	MYLAR	0.047MF 10% 200V
C209	1-102-824-00	CERAMIC	470PF 5% 50V	C517	1-102-154-00	CERAMIC	180PF 20% 2K
C210	1-123-321-00	ELECT	220MF 20% 16V	C519	1-102-112-00	CERAMIC	330PF 10% 50V
C211	1-108-242-00	MYLAR	0.022MF 10% 50V	C520	1-102-030-00	CERAMIC	330PF 10% 500V
C212	1-108-387-00	MYLAR	0.068MF 10% 100V	C521	1-102-112-00	CERAMIC	330PF 10% 50V
C213	1-161-021-00	CERAMIC	0.047MF 10% 25V	C522	1-102-030-00	CERAMIC	330PF 10% 500V
C214	1-161-021-00	CERAMIC	0.047MF 10% 25V	C523	1-108-385-00	MYLAR	0.047MF 10% 100V
C215	1-102-121-00	CERAMIC	0.0022MF 10% 50V	C525	1-102-980-00	CERAMIC	270PF 5% 50V
C216	1-102-525-00	CERAMIC	68PF 5% 50V	C527	●:1-136-063-00	FILM	0.0055MF 3% 1.4KV
C217	1-123-356-00	ELECT	10MF 20% 16V	C529	1-136-136-00	FILM	0.24MF 5% 200V
C218	1-123-447-00	ELECT	0.22MF 20% 50V	C532	1-123-328-00	ELECT	4.7MF 20% 25V
C221	1-161-013-00	CERAMIC	0.01MF 10% 25V	C533	1-131-498-91	TANTALUM	1MF 10% 25V
C222	1-123-286-00	ELECT	0.33MF 20% 50V	C534	1-124-190-00	ELECT	680MF 10% 35V
C223	1-123-356-00	ELECT	10MF 20% 16V	C535	1-123-330-00	ELECT	22MF 20% 16V
C224	1-123-318-00	ELECT	33MF 20% 16V	C536	1-123-321-00	ELECT	220MF 20% 16V
C303	1-102-108-00	CERAMIC	150PF 10% 50V	C537	1-123-348-00	ELECT	470MF 20% 35V
C306	1-123-447-00	ELECT	0.22MF 20% 50V	C538	1-102-212-00	CERAMIC	820PF 10% 500V
C307	1-161-047-00	CERAMIC	0.0047MF 10% 50V	C540	1-123-384-00	ELECT	10MF 20% 100V
C308	1-123-330-00	ELECT	22MF 20% 16V	C541	1-123-024-00	ELECT	33MF 160V
C309	1-101-882-00	CERAMIC	51PF 5% 50V	C542	●:1-121-246-00	ELECT	4.7MF 20% 160V
				C544	1-123-335-00	ELECT	330MF 20% 25V
				C545	1-102-212-00	CERAMIC	820PF 10% 500V

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>			<u>Remark</u>	<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>			<u>Remark</u>
		RV503 1-228-724-00 RES, ADJ, CERAMIC CARBON 10K						SWITCH			
		S2201 1-552-437-00 SWITCH, LEVER					S2202 1-554-530-00 SWITCH, TUNING (14 KEY)	SWITCH			
		S501 1-554-186-00 SWITCH, LEVER						*****			
		SWF201 1-404-227-61 SAWF						*****			
		T201 1-404-466-00 VIFT 44MHZ						*****			
		T201 1-404-466-00 VIFT 44MHZ						*****			
		T202 1-404-467-00 COIL, VIF						*****			
		T202 1-404-467-00 COIL, VIF						*****			
		T203 1-404-467-00 COIL, VIF						*****			
		T203 1-404-467-00 COIL, VIF						*****			
		T251 ▲1-427-530-00 TRANSFORMER, OUTPUT						*****			
		T301 1-426-138-00 TRANSFORMER, INPUT						*****			
		T301 1-426-138-00 TRANSFORMER, INPUT						*****			
		T501 1-437-090-00 HDT						*****			
		T601 ▲1-421-357-31 TRANSFORMER, LINE FILTER						*****			
		X301 1-527-722-00 OSCILLATOR, CRYSTAL						*****			
		▲THP601.1-800-686-31 THERMISTOR (POSITIVE)						*****			
		CRYSTAL						*****			
		X301 1-527-722-00 OSCILLATOR, CRYSTAL						*****			
		*****						*****			
		▲:1-609-513-00 M BOARD						*****			
		*****						*****			
		1-519-262-31 LAMP, NEON						*****			
		▲:1-556-835-00 CABLE, PIN (MT TYPE)						*****			
		CAPACITOR						*****			
		C2201 1-123-610-00 ELECT	0.47MF	20%	50V		R701 1-247-852-00 CARBON	7.5K	5%	1/6W	
		C2202 ▲1-161-904-00 CERAMIC	130PF		125V		R703 1-247-817-00 CARBON	270	5%	1/6W	
		C2203 ▲1-161-904-00 CERAMIC	130PF		125V		R704 1-247-844-00 CARBON	3.6K	5%	1/6W	
		C2204 1-123-379-00 ELECT	0.47MF	20%	50V		R705 1-202-824-00 SOLID	3.3K		1/2W	
		FILTER					R706 1-206-692-00 METAL OXIDE	15K	5%	2W	F
		FL2201 1-235-237-00 FILTER, LOW PASS					R707 1-247-846-00 CARBON	4.3K	5%	1/6W	
		RESISTOR					R708 1-247-826-00 CARBON	620	5%	1/6W	
		R2201 1-247-855-00 CARBON	10K	5%	1/6W		R709 1-247-821-00 CARBON	390	5%	1/6W	
		R2202 1-202-725-00 SOLID	3.3M	10%	1/2W		R710 1-247-844-00 CARBON	3.6K	5%	1/6W	
		VARIABLE RESISTOR					R711 1-202-824-00 SOLID	3.3K		1/2W	
		RV2201 1-230-115-00 VOLUME BLOCK, PRESET					R712 1-206-692-00 METAL OXIDE	15K	5%	2W	F
		RV2202 1-230-116-00 VOLUME BLOCK, PRESET					R713 1-247-846-00 CARBON	4.3K	5%	1/6W	
		R714 1-247-826-00 CARBON					R715 1-247-821-00 CARBON	620	5%	1/6W	
		R716 1-247-844-00 CARBON					R717 1-247-821-00 CARBON	390	5%	1/6W	
		R718 1-206-692-00 METAL OXIDE					R719 1-247-844-00 CARBON	3.6K	5%	1/6W	
		R720 1-202-719-00 SOLID					R721 1-212-359-61 METAL OXIDE	0.82	5%	1W	F
		R722 1-202-848-00 SOLID					R723 1-202-838-00 SOLID	680K		1/2W	
		R723 1-202-838-00 SOLID								100K	1/2W

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Ref.No	Part No.	Description		Remark	Ref.No	Part No.	Description		Remark		
R211	1-247-831-00	CARBON	1K	5%	1/6W	R521	▲.1-214-681-00	METAL	10	1%	1/4W
R212	1-247-855-00	CARBON	10K	5%	1/6W	R522	▲.1-206-676-00	METAL OXIDE	3.3K	5%	2W
R213	1-247-819-00	CARBON	330	5%	1/6W	R523	▲.1-247-831-00	CARBON	1K	5%	1/6W
R214	1-246-994-00	CARBON	680	5%	1/8W	R524	1-247-815-00	CARBON	220	5%	1/6W
R215	1-247-883-00	CARBON	150K	5%	1/6W	R525	1-246-504-00	CARBON	20K	5%	1/4W
R216	1-247-805-00	CARBON	82	5%	1/6W	R527	1-246-495-00	CARBON	8.2K	5%	1/4W
R217	1-247-833-00	CARBON	1.2K	5%	1/6W	R528	1-246-475-00	CARBON	1.2K	5%	1/4W
R218	1-247-831-00	CARBON	1K	5%	1/6W	R529	1-214-757-00	METAL	15K	1%	1/4W
R219	1-247-863-00	CARBON	22K	5%	1/6W	R530	1-246-489-00	CARBON	4.7K	5%	1/4W
R220	1-247-863-00	CARBON	22K	5%	1/6W	R531	1-212-362-00	METAL OXIDE	1.5	5%	1W
R221	1-247-821-00	CARBON	390	5%	1/6W	R532	1-247-845-00	CARBON	3.9K	5%	1/6W
R222	1-246-506-00	CARBON	24K	5%	1/4W	R533	1-247-879-00	CARBON	100K	5%	1/6W
R223	1-206-525-00	METAL OXIDE	39	5%	3W	R534	1-247-869-00	CARBON	39K	5%	1/6W
R224	1-247-807-00	CARBON	100	5%	1/6W	R536	1-247-021-00	CARBON	1.5	5%	1/8W
R225	1-247-831-00	CARBON	1K	5%	1/6W	R537	1-247-021-00	CARBON	1.5	5%	1/8W
R226	1-247-849-00	CARBON	5.6K	5%	1/6W	R538	1-247-021-00	CARBON	1.5	5%	1/8W
R261	1-202-359-11	SOLID	100	5%	1/4W	R539	1-246-465-00	CARBON	470	5%	1/4W
R301	1-247-837-00	CARBON	1.8K	5%	1/6W	R540	1-202-842-51	SOLID	220K		1/2W
R303	1-247-855-00	CARBON	10K	5%	1/6W	R541	1-214-737-00	METAL	2.2K	1%	1/4W
R305	1-247-827-00	CARBON	680	5%	1/6W	R542	1-214-743-00	METAL	3.9K	1%	1/4W
R306	1-247-855-00	CARBON	10K	5%	1/6W	R543	1-214-739-00	METAL	2.7K	1%	1/4W
R309	1-247-815-00	CARBON	220	5%	1/6W	R544	1-214-755-00	METAL	12K	1%	1/4W
R310	1-247-815-00	CARBON	220	5%	1/6W	R546	1-247-855-00	CARBON	10K	5%	1/6W
R311	1-247-815-00	CARBON	220	5%	1/6W	R548	1-214-912-00	METAL	91K	1%	1/2W
R312	1-247-821-00	CARBON	390	5%	1/6W	R549	1-246-495-00	CARBON	8.2K	5%	1/4W
R313	1-247-829-00	CARBON	820	5%	1/6W	R550	1-247-614-00	CARBON	3.3K	5%	1/8W
R314	1-247-840-00	CARBON	2.4K	5%	1/6W	R552	1-246-461-00	CARBON	330	5%	1/4W
R315	1-247-863-00	CARBON	22K	5%	1/6W	R553	1-246-471-00	CARBON	820	5%	1/4W
R316	1-247-844-00	CARBON	3.6K	5%	1/6W	R555	1-213-146-00	METAL OXIDE	1.8K	5%	1W
R317	1-247-850-00	CARBON	6.2K	5%	1/6W	R556	1-206-664-00	METAL OXIDE	1K	5%	2W
R318	1-247-855-00	CARBON	10K	5%	1/6W	R557	1-213-146-00	METAL OXIDE	1.8K	5%	1W
R319	1-247-852-00	CARBON	7.5K	5%	1/6W	R559	▲.1-213-125-00	CARBON			1/4W
R320	1-247-837-00	CARBON	1.8K	5%	1/6W	R560	1-213-125-00	METAL OXIDE	33	5%	1W
R321	1-247-872-00	CARBON	51K	5%	1/6W	R561	1-244-894-51	CARBON	7.5K	5%	1/2W
R322	1-247-806-00	CARBON	91	5%	1/6W	R602	1-205-707-00	CEMENTED	2.2		10W
R323	1-247-831-00	CARBON	1K	5%	1/6W	R604	1-213-155-00	METAL OXIDE	10K	5%	1W
R324	1-247-857-00	CARBON	12K	5%	1/6W	R605	1-213-151-00	METAL OXIDE	4.7K	5%	1W
R325	1-247-807-00	CARBON	100	5%	1/6W	R606	1-247-865-00	CARBON	27K	5%	1/6W
R324	1-247-831-00	CARBON	1K	5%	1/6W	R607	1-247-891-00	CARBON	330K	5%	1/6W
R501	1-247-842-00	CARBON	3K	5%	1/6W	R608	1-247-887-00	CARBON	220K	5%	1/6W
R502	1-247-855-00	CARBON	10K	5%	1/6W	R610	▲.1-202-719-00	SOLID	1M	10%	1/2W
R503	1-247-887-00	CARBON	220K	5%	1/6W	R611	1-205-708-00	CEMENTED	510	5%	10W
R504	1-247-873-00	CARBON	56K	5%	1/6W	R612	1-214-599-00	METAL OXIDE	68K	5%	1W
R505	1-246-489-00	CARBON	4.7K	5%	1/4W	<u>VARIABLE RESISTOR</u>					
R506	1-247-834-00	CARBON	1.3K	5%	1/6W	RV201	1-228-723-00	RES, ADJ, CERAMIC	CARBON	4.7K	
R509	1-247-839-00	CARBON	2.2K	5%	1/6W	RV301	1-228-719-00	RES, ADJ, CERAMIC	CARBON	470	
R510	1-247-828-00	CARBON	750	5%	1/6W	RV303	1-228-724-00	RES, ADJ, CERAMIC	CARBON	10K	
R512	1-247-846-00	CARBON	4.3K	5%	1/6W	RV304	1-230-086-00	RES, VAR,	CARBON	10KX4	
R513	1-247-815-00	CARBON	220	5%	1/6W	RV305	1-230-086-00	RES, VAR,	CARBON	10KX4	
R514	1-206-749-00	METAL OXIDE	10K	5%	3W	F					
R517	1-247-877-00	CARBON	82K	5%	1/6W	RV307	1-230-086-00	RES, VAR,	CARBON	10KX4	
R519	1-247-852-00	CARBON	7.5K	5%	1/6W	RV308	1-230-086-00	RES, VAR,	CARBON	10KX4	
R520	1-247-827-00	CARBON	680	5%	1/6W	RV501	1-228-727-00	RES, ADJ, CERAMIC	CARBON	47K	

- The components identified by **☒** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

A M C

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>		<u>Remark</u>	<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>		<u>Remark</u>						
RV503	1-228-724-00	RES, ADJ, CERAMIC CARBON 10K			S2201	1-552-437-00	SWITCH, LEVER								
		<u>SWITCH</u>			S2202	1-554-530-00	SWITCH, TUNING (14 KEY)								
S501	1-554-186-00	SWITCH, LEVER			*****										
		<u>FILTER</u>			*****										
SWF201	1-404-227-61	SAWF			*****										
		<u>TRANSFORMER</u>			*****										
T201	1-404-466-00	VIFT 44MHZ			*****										
T201	1-404-466-00	VIFT 44MHZ			*****										
T202	1-404-467-00	COIL, VIF			C702	1-102-112-00	CERAMIC	330PF	10%	50V					
T202	1-404-467-00	COIL, VIF			C703	1-102-112-00	CERAMIC	330PF	10%	50V					
T203	1-404-467-00	COIL, VIF			C704	1-102-112-00	CERAMIC	330PF	10%	50V					
T203	1-404-467-00	COIL, VIF			C705	1-162-116-00	CERAMIC	680PF	10%	2KV					
T251	▲1-427-530-00	TRANSFORMER, OUTPUT			C706	1-129-714-00	FILM	0.01MF	10%	630V					
T301	1-426-138-00	TRANSFORMER, INPUT			*****										
T301	1-426-138-00	TRANSFORMER, INPUT			*****										
T501	1-437-090-00	HDT			*****										
T501	1-437-090-00	HDT			*****										
T601	▲1-421-357-31	TRANSFORMER, LINE FILTER			*****										
		<u>THERMISTOR</u>			*****										
▲THP601.1-800-686-31	THERMISTOR (POSITIVE)				*****										
		<u>CRYSTAL</u>			*****										
X301	1-527-722-00	OSCILLATOR, CRYSTAL			*****										
		<u>M BOARD</u>			*****										
▲1-609-513-00	M BOARD				*****										
1-519-262-31	LAMP, NEON				R701	1-247-852-00	CARBON	7.5K	5%	1/6W					
▲1-556-835-00	CABLE, PIN (MT TYPE)				R703	1-247-817-00	CARBON	270	5%	1/6W					
		<u>CAPACITOR</u>			R704	1-247-844-00	CARBON	3.6K	5%	1/6W					
C2201	1-123-610-00	ELECT	0.47MF	20%	R705	1-202-824-00	SOLID	3.3K		1/2W					
C2202	▲1-161-904-00	CERAMIC	130PF	125V	R706	1-206-692-00	METAL OXIDE	15K	5%	2W	F				
C2203	▲1-161-904-00	CERAMIC	130PF	125V	R707	1-247-846-00	CARBON	4.3K	5%	1/6W					
C2204	1-123-379-00	ELECT	0.47MF	20%	R708	1-247-826-00	CARBON	620	5%	1/6W					
		<u>FILTER</u>			R709	1-247-821-00	CARBON	390	5%	1/6W					
FL2201	1-235-237-00	FILTER, LOW PASS			R710	1-247-844-00	CARBON	3.6K	5%	1/6W					
		<u>RESISTOR</u>			R711	1-202-824-00	SOLID	3.3K		1/2W					
R2201	1-247-855-00	CARBON	10K	5%	1/6W	R712	1-206-692-00	METAL OXIDE	15K	5%	2W	F			
R2202	1-202-725-00	SOLID	3.3M	10%	1/2W	R713	1-247-846-00	CARBON	4.3K	5%	1/6W				
		<u>VARIABLE RESISTOR</u>			R714	1-247-826-00	CARBON	620	5%	1/6W					
RV2201	1-230-115-00	VOLUME BLOCK, PRESET			R715	1-247-821-00	CARBON	390	5%	1/6W					
RV2202	1-230-116-00	VOLUME BLOCK, PRESET			R716	1-247-844-00	CARBON	3.6K	5%	1/6W					
		<u>RESISTOR</u>			R717	1-202-824-00	SOLID	3.3K		1/2W					
R718	1-206-692-00	METAL OXIDE	15K	5%	2W	R719	1-202-842-51	SOLID	220K		1/2W				
R719	1-202-842-51	SOLID	1M	10%	1/2W	R720	1-202-719-00	SOLID	1M	10%	1/2W				
R720	1-202-719-00	SOLID	0.82	5%	1W	R721	1-212-359-61	METAL OXIDE	0.82	5%	1W	F			
		<u>VARIABLE RESISTOR</u>			R722	1-202-848-00	SOLID	680K		1/2W					
RV2201	1-230-115-00	VOLUME BLOCK, PRESET			R723	1-202-838-00	SOLID	100K		1/2W					
RV2202	1-230-116-00	VOLUME BLOCK, PRESET													

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C V Z

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark				
<u>VARIABLE RESISTOR</u>											
RV701	1-230-105-00	RES, ADJ, CARBON 3.3K		L903	△.1-426-146-00	COIL, DEGAUSSING					
RV702	1-230-103-00	RES, ADJ, CARBON 2.2K		L904	△.1-451-234-00	DEFLECTION YOKE (SY-125A)					
RV703	1-230-104-00	RES, ADJ, CARBON 4.7K		S901	△.1-554-471-00	SWITCH, PUSH (AC POWER)					
RV704	1-230-103-00	RES, ADJ, CARBON 2.2K		SP901	1-503-239-00	SPEAKER					
RV705	1-230-104-00	RES, ADJ, CARBON 4.7K		T503	△.1-439-314-00	TRANSFORMER ASSY, FLYBACK					
RV706	1-226-063-00	RES, ADJ, CARBON 2.2M		TU101	△.1-463-445-00	TUNER, ET (BT-892)					
RV707	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M		V901	△.8-735-550-05	CRT (A34JB000X)					
RV708	△.1-230-164-00	RES, ADJ, METAL GLAZE 55M		*****							
RV709	1-230-106-00	RES, ADJ, CARBON 10K		<u>ACCESSORIES AND PACKING MATERIALS</u>							
*****								*****			
△:1-609-515-21 V BOARD								*****			
*****								*****			
<u>CONNECTOR</u>								*****			
A6	△:1-941-001-03	CONNECTOR ASSY 3P		Y-2063-103-0	AN-15 LOOP ANTENNA			*****			
*****				1-501-276-00	ANTENNA, TELESCOPIC (AN-18)			*****			
RESISTOR				1-504-034-32	EARPHONE, MAGNETIC (ME-20B)			*****			
R401	1-247-853-00	CARBON	8.2K 5%	1-561-335-00	CONNECTOR, ANTENNA (EAC-31)			*****			
*****				1-562-322-00	ADAPTOR, CHANGE (PIN-F)			*****			
VARIABLE RESISTOR								*****			
RV401	1-230-070-00	RES, VAR, SLIDE 10K		3-701-629-00	BAG, POLYETHYLENE			*****			
*****				4-365-831-00	SHEET, PROTECTION			*****			
△:1-609-516-21 Z BOARD				4-366-504-01	LABEL (B), INDICATOR			*****			
*****				4-366-512-00	CUSHION (UPPER) (ASSY)			*****			
<u>CONNECTOR</u>				4-366-513-00	CUSHION (LOWER) (ASSY)			*****			
A5	△:1-941-003-01	CONNECTOR ASSY, MINIATURE 3P		4-366-514-00	BOARD, SIDE			*****			
*****				4-366-520-00	CARTON (ASSY) (KV-1331 MODEL)			*****			
JACK				4-366-522-00	CARTON (ASSY) (KV-1332 MODEL)			*****			
J401	1-507-864-00	JACK, EARPHONE		4-366-526-00	LABEL, SEALING			*****			
*****				4-491-213-22	INSTRUCTION			*****			
<u>MISCELLANEOUS</u>								*****			
*****								*****			
1-452-032-00 MAGNET, DISK 10mmØ								*****			
1-452-094-00 MAGNET, ROTATABLE DISK, 15mmØ								*****			
1-452-277-00 MAGNET, BMC								*****			
△.1-536-790-21 TERMINAL BOARD ASSY, ANTENNA								*****			
△.1-551-603-00 CORD, POWER								*****			
△:1-556-375-21 FEEDER (WITH TERMINAL)								*****			
△:1-556-870-00 CABLE (WITH F CONTACT)								*****			
1-562-289-00 CONTACT, F								*****			
△:1-941-001-00 CONNECTOR ASSY, LARGE 1P								*****			

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